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## **Soviet Union**

### ***EKO: ECONOMICS & ORGANIZATION OF INDUSTRIAL PRODUCTION***

No 5, MAY 1987

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## SOVIET UNION

EKO: ECONOMICS & ORGANIZATION OF  
INDUSTRIAL PRODUCTION

No 5, May 1987

[Except where indicated otherwise in the table of contents the following is a complete translation of the Russian-language monthly journal EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA published in Novosibirsk.]

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## TIRASPOL SEWING ASSOCIATION INTRODUCED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 5, May 87 pp 3-5

[Introduction to articles that follow: "A Unity of Social and Industrial"]

[Text] There is a special enterprise in Moldavia--the Tiraspol Sewing Association imeni 40-Letiye VLKSM. It produces very good products that are just as good as imported ones, which in itself is a rarity among our country's sewing enterprises. There is only one criterion here: that people with any tastes would like to buy and wear items with the Tiraspol Odema trademark.

The association's experience has been studied for a long time, but this study is especially important now when the country's national economy is turning in the direction of social issues. In Tiraspol social and production aspects are not only closely interconnected, they represent a harmonious whole.

The association was organized in 1980 on the basis of the Tiraspol Sewing Factory imeni 40-Letiye VLKSM. The Sewing Production Association included four sewing factories in Tiraspol and two branches outside the city. There are now 6,500 people working there who produce sewn items of 101 descriptions: men's jackets and trousers, women's dresses and robes, items for children of school age, preschool age and nursery age, outfits for newborn children and so forth worth an overall sum of about 100 million rubles. From 50 to 80 percent of the output is comprised of items for children (90 percent of their production cost is the cost of the fabric).

By 1953 losses at the enterprise amounted to 4 million rubles. They managed to overcome this tendency. The enterprise received its first profit in 1955.

The portfolio of trade orders includes 320 different models of clothing, 60 percent of which are updated each year, and the proportion of products with improved consumer qualities (with an index of "n" and sold at contractual prices) in the overall volume of output exceeds 50 percent. The enterprise's profit increases each year and today it amounts to 14 million rubles.

The association's collective is active and is widely known for its undertakings:

In the 1950's it was a movement for efficient cutting of fabric, which grew into the creation of a comprehensive method of efficient utilization of materials.

In 1958-1964 it was the achievement of the highest output per worker in the branch.

In 1965-1975 it was the changeover to the output of competitive products.

Since 1976 it has been the introduction of a goal-oriented management structure.

The enterprise is solving in a worthy way those difficult problems that were set for light industry by the party and government. Of course, the general path to sharply improving product quality in the branch is the path of technical reequipment and the introduction of modern technologies. But to a significant degree excellent product quality can be achieved as a result of organizational and social reserves. Since light industry enterprises are mainly "female," this also determines the peculiarities of their work.

They have not created hothouse conditions for the enterprise. Moreover, it operates with a critical shortage of production capacities, there are no benefits in the provision of equipment, and the female problem is crucial. The basic effect is obtained as a result of mobilizing the social factor.

What, in our opinion, characterizes the work with people at the Tiraspol Sewing Association?

Above all, it has actually been placed at the top of the list here. It does not go from solving technical and production problems to solving social ones, but, vice versa, attention is paid to social problems and complex production problems are solved on the basis of this--this is the ideology that is professed here. This makes it possible to achieve great production successes.

In the social program for the development of the collective a great deal of attention is devoted to the evolution and development of the individual.

Social issues pervade the work of all services of the association. This is not the concern of the sociological service alone.

Social work is viewed as a system and a profoundly individual approach has been taken to representatives of various groups of workers at the enterprise.

The Tiraspol experience is interesting from another standpoint. The enterprise, having achieved such good results, is now experiencing a turning point. It has exhausted its internal reserves. The poor supply of housing, the small amount of capital investments in reconstruction, and the inadequate level of social, cultural and domestic services have led to a situation where the association's prestige in the city has begun to drop. The policy of the republic ministry regarding this enterprise has turned out to be ineffective. The situation that has arisen in the association demonstrates once again how close the tie is between social and production aspects within the enterprise

and how easily one can destroy that which has been achieved through years of persistent work. It is precisely this unity that we wanted to depict in this selection.

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#### SEWING ASSOCIATION DIRECTOR INTERVIEWED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 5, May 87 pp 5-25

[Interview with Valentina Sergeyevna Solovyeva, director of the Tiraspol Sewing Association, by journalist L. A. Shcherbakova: "The School of Life--The School of Management"]

[Text] One is impressed and pleasantly surprised by many things in the Tiraspol Sewing Association. But one of the strongest impressions is made by the personality of the director, Valentina Sergeyevna Solovyeva, for the work style in the association is the Solovyeva style. Everything the enterprise has achieved has been achieved thanks to the efforts of the collective under her leadership. Valentina Sergeyevna is a bright and unusual individual. She came to the sewing industry immediately after the Great Patriotic War: her throat was sore and the young schoolteacher with a higher pedagogical education could not teach in the school. She worked for several months in the factory and was appointed head engineer. Solovyeva had a large amount of experience in life behind her and a great deal of experience in management work. Her life (and the life of the association) included everything: both bursts of progress and setbacks. Valentina Sergeyevna has become accustomed to not flattering herself too much when she is successful and to looking for ways of moving on when she has failed. If you want to survive you must have a strategy and tactics for survival. But Solovyeva was not interested in simply surviving. She needed for the association's collective to be the best, for people to be proud of it. All these lessons from life, analyzed and contemplated, lay at the basis of the methods for managing the collective. EKO correspondent L. Shcherbakova discussed this with the general director of the Tiraspol Production Sewing Association, Hero of Socialist Labor V. S. Solovyeva.

[Question] Valentina Sergeyevna, could you tell us the basic areas that must not be overlooked when working with people?

[Answer] I think I can. But I must emphasize at once: in the work of a manager it is important not to single out individual, special methods and forms of work, but to see everything together, as a whole--goals, tasks, methods, and means. And only after that does one look at details, nuances, and peculiarities.

I have followed very attentively all EKO articles on the work of the best directors and have found much that is useful in their work. I have read literature on management that models the work of higher management personnel both in our country and abroad. I even asked our plant sociologists to "play out" on a computer the activity of the directors.

In a word, the concept has developed gradually. But I am deeply convinced that it is necessary. I noticed that it is considerably easier for people to work if their leader has a clear concept that everyone can understand, when they see that his instructions are not capricious but the result of a well-thought-out management system.

On the whole it is fairly simple. It includes three major principles, each of which includes the number of constituents that, if you will, comment on the major principles. Schematically, it can be represented as follows.

First principle. Constant, continuous improvement and perfection of management:

a strategy of innovation in one's own work and that of each subdivision;

improvement of the organizational structure of production management;

modernization of the principles of organization and payment for labor no less than once every 5 years;

delegation of authority and responsibility where they are most effective and efficient.

Second principle. Constant control of the process of education in the collective:

activization of the human factor and its utilization at all levels of management;

pedagogization of the production process;

constant improvement of methods and forms of social control.

Third principle. Comprehensive development of the activity of public organizations:

encouragement of forms of self-organization and participation in management;

constant reorganization of socialist competition.

Understandably, all these principles and their constituents are interconnected and closely interwoven in daily work. Only for convenience of presentation can one see them as relatively independent. In practice they frequently merge together, but they never lose their relative independence.

[Question] Your idea has many concepts that are unusual for the language of a director. For example, pedagogization of the management process....

[Answer] The director of an enterprise should be a skilled educator. Several years ago I asked the USSR Academy of Pedagogical Sciences for help in organizing training of our managers in questions of industrial pedagogy. Unfortunately, they were unable to satisfy my request. As they explained to us, scientific research institutes of a pedagogical profile do not handle this problem. Honestly speaking, we do not understand why. After all, where do most of the personnel at enterprises come from? They were yesterday's schoolchildren whose civic development should be completed in the labor collective.

Scientific and technical progress is making significant changes in the work with people. Sociological research conducted at the enterprise has shown that many tested forms of educational influence are unsuitable today. Previously educational influence was directed to some average member of the collective. Today, when economic and political tasks are much more complicated, this "average" influence is not enough to resolve them. It is necessary to reach each specific person, teach him professional mastery, create favorable conditions for his labor, arouse in him a feeling of deep personal interest in the collective success, and develop creative initiative and a high level of social activity.

But people differ a great deal. They include workers, engineering and technical personnel, and employees. These are young workers, middle-aged workers, and elderly workers. They are men and women, with or without families, without children or with many children. Using the language of sociologists, a multitude of objects of education with their specific ways of life have ended up in a single collective. And if we wish to reach each person we must actively influence his social-production activity. And this means that it is necessary to exert a constant educational influence on the behavior of the worker both in production and outside of it--in the spheres of daily life, leisure, communication and the family.

Many of our problems come from the fact that once we have earmarked our goal we do not know how to reach it. A certain ideal image of the worker of the future has been created, but how does one develop such a person? In our association we had previously drawn up plans for social development without developing the social technology. This is radically wrong, just as it is wrong that there is absolutely no development of industrial pedagogy in the country. And yet who comes to our enterprise? Those same children. I remember my son. He came to the factory after the eighth grade. And today, although he is still very young, he has 20 years of work service. While working in production he completed school, the institute, graduate school, and he grew up and developed along with his contemporaries. But how does one influence them in the various stages of their development? This influence is necessary and there can be no vacuum in questions of education. We will not fit into this "niche"--it is taken up by influences that are, perhaps, alien to our society.

Here is a concrete situation: it is necessary to retrain a worker and he does not want this. What arsenal of influence on the individual is available to the manager? He has tried talking to the worker, but the worker refused, he has given him an order--again he refused, he has given him an official reprimand.... What next? Fire him? But there are not enough workers. So where do we go from here?

One must say that the higher agencies do not help us here. There is not a single decree or set of provisions that envision this area of work of the manager, and they do not contain commentaries or methods of how to deal with this. Therefore each manager does it his own way, taking advantage of his experience, talent, and character. This lack of coordination is not as innocent as it may seem. Frequently our laws for workers at enterprises are transformed on the basis of these decisions which are sometimes even incorrect.

Here is one example of a narrow view. I treat all shop leaders the same way. But they treat me differently in different shops. Why? If the shop chief is acting correctly, the people think that the management of the enterprise is also operating correctly, and if the association is in order--the management of the city is working well.... This is the kind of chain we have. The understanding of what is going on in the city, oblast, republic and country depends equally on who is managing the production collective and how.

We do a poor job of teaching shop chiefs, engineering and technical personnel, and foremen how to work with people. And yet each of them must be both a psychologist and an educator. True, we have now introduced educators into the shops....

[Question] But that is probably only "social assistance" to the shop chief, engineer, foreman or brigade leader....

[Answer] Yes, the educator gives them backup insurance, but these are "people from the outside," and they do not participate along with the workers in the production process. Hence their influence is also weak. The central figure in this respect is the foreman. He is the person closest to the worker (except for his friends at work). And he should be the one to have the entire arsenal of pedagogical methods of working with people.

[Boxed item: Journalist's commentary. This is a kind of pedagogical talent Valentina Sergeyevna has. Destiny bestowed on me four miraculous evenings. These were conversations with Valentina Sergeyevna lasting late into the night, slow walks through Tiraspol at night, and talking and more talking.... She is a surprisingly wise person. I recall what one of her deputies had to say: we were sitting in Solovyeva's office and consulting on some complicated production issue. Suddenly a worker in tears looked in from the reception room. Solovyeva interrupted the conference and listened to the woman, constantly paying attention to her and literally forcing herself to be sympathetic. Right then the telephone rang, helping her. The worker left. Why do all that now?--we asked. She could have waited. "I had to teach you how to behave in such a situation, to show the worker that you all sympathize with her, that she is not alone," Solovyeva told us.]



According to my observations, enterprises that work poorly with people are the most unstable. They can improve sharply, but then they declined sharply later.

Of course there were also born educators. One of our shops employing 1,500 people was led by a woman with only a secondary education. But she was talented and kind-hearted, and very honorable in her relations with people. She was feisty and could yell at people, but she never degraded a person. Perhaps this is why she was always forgiven. She was a person with internal pedagogic tact, a born leader. She went on pension, and we cannot replace and we will never be able to fully.

[Question] Valentina Sergeyevna, what are your own principles for working with people?

[Answer] You know, that is a very big question. But I shall try to single out the main things.

It is necessary to awaken initiative in a person. Everyone should be first in something. This is especially important for us since the collective is mainly women. We hold many competitions and reviews, and the human personality is evaluated according to 40 quality indicators. The worst thing for a collective is the mediocre person, the one who hides in the shadows and keeps to himself. It is necessary to awaken in each person a desire for leadership in some area. Let the collective know that a certain worker is a better sewer than all the others, another one is a better cook, and so forth.

According to my observations, the most inert group of workers here now are engineering and technical personnel. They are good at their jobs, but is this really all we expect of them? They are potentially capable of doing much more. These are very educated people, intelligent, and they understand what needs to be changed on a statewide scale. And I expect them to come to me and say:--Valentina Sergeyevna, in my section or shop I do not like the following.... I want to change this and that.... But so far I have not been able to move them.

In our association we have now created a selectional automated system for achieving goals. It gives people a reference point and enables us to select the best in all areas of work and spread it throughout the association. All the best achievements in any area, both production and social, are entered into the memory of the computer and for similar work it puts out only the right normative (time, qualitative and other indicators). The data are constantly being updated. In the future we shall feed in the absolutely best normatives in the country and the best world achievements.

The next principal point is that it is necessary to be honest in relations with people, to try to understand them even if they are wrong, and to do good if you can even to those who let you down and do not appreciate it. The very position of the manager--a state person--means that personal sympathies or antipathies cannot be let out of control.

[Boxed item: Journalist's commentary. Everything Solovyeva does at the enterprise is done without the slightest hypocrisy and it is done seriously. I remember the following story. The factory was struggling for the title of collective of communist labor. How could they test themselves? In the magazine OGONEK there was a letter addressed to people with a complicated destiny who had not found their place in life, and it invited them to come to work in Tiraspol. They came--well-known pickpockets, about whom the police talked to Solovyeva, drunkards who had drunk up everything except for the ragged clothes on their back--she did not manage to reeducate all of them, but some of them, including a notorious Odessa pickpocket who had run away twice and whom Solovyeva trusted twice, worked in the association until they received their pension.]

But one cannot compare oneself to a collective and accuse everybody of something. There cannot be an entirely bad collective, and you are the only one who is good. For in that case it would not be clear who should leave and who should stay. On the contrary, it is necessary to be able to single out the absentees and drunkards. Our collective is good, but there is N. N., who lets his comrades down. Such should be the position of the manager.

When working with people one cannot keep thinking about their previous mistakes. Here is one example. A young shop chief had me call his foreman into my office in order to convince him of the need for innovation. But how should one begin the conversation? It was already 2 years ago, he says in agitation, that I gave you an order.... And you have not done anything yet.... Many words were said, but they were said in vain. Moreover, by reminding the foreman of his past errors, the shop chief has irritated him regarding the new work as well. By looking at past sins you will not get very far forward.

The real leader is one who boldly delegates his authorities, leaving himself time to solve long-range problems. One of my deputies is an outstanding specialist who works, as they say, indefatigably, without pushing anything off onto others. But I would like for her to give her assistance a larger part of the load. The manager must free himself from immediate concerns, concentrate on the most important ones, and develop control-transfer functions. All of our block-target structure of management, which envisions dispatcher-coordinators, is directed toward relieving the block managers and my deputies of matters which can be done by someone else. Or here is another example. A person who had previously not worked in management was put in charge of one of the blocks. I appointed him, counting on his potential capabilities. Then he boldly began to delegate authority since he did not know much at first. Time passed and he penetrated into the essence of the work, but even now, since he still designates authority, he has developed into an excellent manager.

I recall the following case. A very good engineer was appointed head engineer. But this person was used to doing everything himself. In every document that crossed his desk he saw parts that were not clear to him and put the document aside so that he could figure it out during his leisure time. After a month his desk was overflowing with papers!

But here is perhaps the main thing, in my opinion, in work with people. However many people there are, there will be an equal number of approaches and an equal number of methods of work....

[Boxed item: Journalist's commentary. Valentina Sergeyevna is devoted to her factory with that high devotion of a creator who cannot allow herself to stand still and be complacent. She is constantly looking for new work methods and new people. All this is on behalf of the well-being and glory of the association. Here is just one clever idea of the general director. A young specialist who had come to the association had to defend his project after a year. The theme of the project was significant and important for production. The contribution from him was weighty. And since the person loved what he had invested his efforts in, his attachment to the association increased. There are so many Muscovites and Leningraders who love their beautiful native cities and sincerely want to return there but have remained in Tiraspol! They have become attached to the association.

Painstaking, truly selective work is being done by Solovyeva even now as she develops a pleiad of young managers, entering into the role of director-mentor. Of her eight deputies six are young people who have grown into excellent managers.]

The manager should be capable of making a courageous decision. He should think about and weigh all the pros and cons, but once he has made a decision he should fight for it to the end.

[Boxed item: Journalist's commentary. Valentina Sergeyevna herself is a very courageous person, both in her daily life and in decision making. She can step in to separate people who are fighting or protect the one who is beaten. There have been repeated cases like this in her life. Her credo: If you act selflessly and justly, people will understand you. True, she has repeatedly had to enter into "fights" more serious than squabbles on the street in order to defend the truth of this credo. She has been praised to the skies, but it also happened that she was fired, so Solovyeva had to prove that she was necessary to the factory. In the end, all of her actions, even the ones that seem severe at first glance, were generated by this devotion of her whole life to duty.

There have been unique cases in her life and work.

The first case. She was appointed head engineer when she had been working at the factory for only a couple of months and they immediately sent her to Kishinev to sort items. There at the first conference in her short period of leadership activity she found out that the amount of defective work was immense (a whole batch of trousers has been sewn without back pockets) and that they could be taken to court for this. She went to the union ministry. They called the head engineer to Moscow. A worker of the main board who had become wise with experience, who was touring the factory took a look at the youngish woman who had a very unpleasant story and gave her her first piece of advice: Take the methodological instructions on the technology of sewing production and study them well to begin with, and that helped her to disentangle herself from this terrible situation. Thanks to him. He did not

put an end to the future best director of the best sewing enterprise in the branch.

But when passing through the ministry offices, Solovyeva noted that the representatives of other leading factories were filling out forms for participation in the all-union competition. Solovyeva also filled one out. They did not expect this quickness from her and tried to shame her: where did you crawl in from? You have nothing but defective work! "We will not be producing defective work for the rest of our lives," she responded reasonably. This episode was perhaps the beginning of the glorious biography of the factory and then--the association. During the first year of the competition the collective took third place. But Solovyeva and her advisers led the enterprise to new heights. Solovyeva was merciless about any sluggishness, anything that caused harm to the factory. But she was also merciless with herself. Everyone in the collective knows this.

She did not have enough knowledge and began to study, completed her second institute, and acquired the specialty of engineer-technologist of sewing production. Along with her colleagues she was always looking for something new--in her relations with the suppliers or in the organization of production. She was happy if out of the chaos and confusion she could create something orderly and well-structured. She approached things with female carefulness and male soberness. Destiny did not strew Solovyeva's path with nothing but roses, she lived through dark times, she overcame slander and personal insults, but she did not leave her factory. And she could have left it.

The second case. At the beginning of the 1960's she was elected first secretary of the CPSU Gorkom of the City of Tiraspol. Would she have to abandon the factory, where serious restructuring had been started? The indefatigable Solovyeva, not understanding, took every burden on herself and asked the Central Committee of the Communist Party of Moldavia to allow her to be first secretary of the CPSU Gorkom on a public basis. For 2 years she would be at the factory at 6 in the morning. She worked there until 8. Then she would go to the gorkom. In the evening, until late at night she was again at the factory. She was helped, of course, by the collective who had been educated in Solovyeva's traditions. This entire story ended with a heart attack, and because of her help Solovyeva was relieved of the position of first secretary of the party gorkom.]

[Question] Valentina Sergeyevna, you have young, energetic deputies who are block chiefs. (Footnote 1) What do you value in them? Why did you choose these particular people?

[Answer] First of all, you look at how capable a person is of working. This is the most obvious thing. Then you look to see whether or not he has a "false bottom," whether he is sincere, honest, orderly, whether or not he gets involved in gossip, which is especially important for a female collective.

When you weigh everything: this is a hard-working person, talented but capable of questionable acts. You begin to reeducate....

[Question] How?

[Answer] Only by using the examples of other people. This does not diminish a person's self-esteem, it does not put him at odds with the manager, and it does not give the impression of moralizing, which immediately pushes people away. As though inadvertently I noticed the orderliness of other people in the presence of this person. An intelligent person always draws the correct conclusion. If the person does not, then I speak directly.

Basically I use an incentive system. It makes a person more sensitive to others' influences, it develops the soul while punishment toughens the skin. Any or almost any person can be educated through incentives and they can be punished well by rewarding someone else.

Of course this system should not be turned into a kind of eulogy. Therefore it is necessary to evaluate what the person has done recently, and not praise him for something that is long past.

In general, this is the most complex art--working with people. I am older than my deputies and therefore I see their mistakes of youth that will pass with time and where they are seriously lacking. The most difficult thing is envy. Envious people can almost never be reeducated.

In general it is very important, in my opinion, not to see only the bad in a person, even if he is not doing the work entrusted to him. But what if this is just his nature? A couple of months after a young specialist comes to the association, the foreman tells him about his possibilities in the director's office. We insist that he tell us about the merits and the shortcomings of the person. Each individual is multifaceted and it is necessary to find and illuminate the excellent facets.

[Question] And what about the individual in the brigade?

[Answer] Do you really think that the collective form of labor organization impedes the development of the individual? Frequently now when speaking about brigades people have in mind only payment according to the coefficient of labor participation. This is wrong. We wish to direct brigades to solving other problems. It is my deep conviction that payment should be arranged according to the utilization of technically substantiated normatives. We have rejected the coefficient of labor participation once and for all. One cannot share wages, they must be earned. It is not a feeling of sharing wages that must be developed in the collective, but a feeling of unity of people.

The first brigades of communist labor in the branch originated in our collective. We have experience in this area. Now we are creating brigade councils whose activity we direct toward consolidating the collectives.

[Question] Valentina Sergeyevna, one more difficult question--about socialist competition. This was what was supposed to have revealed the possibilities of the individual....

[Answer] You are right, this is indeed a difficult question. The competition is not producing the results we had counted on. They say that the competition

is the key to increasing effectiveness. But what should we do with it? I do not know. And the worst thing is that the people whose job it is to deal with these problems on the scale of the country do not know either. I have in mind primarily the USSR State Committee for Labor and Social Problems. So far there is nothing but formalism in the arrangement of the competition. It seems that if you were to take it away today the collective would not notice. This question is just as complicated and unresolved on the scale of the country as is the activization of the work of Komsomol organizations of enterprises. And these are two key problems.

At one time people degraded and shamefully remained silent about the movement for communist labor. But what was suggested to replace it? There are indicators of the production activity of the collective. We choose those that for some reason we call indicators of the competition (basic, additional, taken into account, and so forth), we look at the results (for the month, quarter, semester, year, 5-year period) and according to the best results we name the winners and the outsiders.

Such is the real situation in any collective. The only differences are in the selection of indicators--some take into account more precisely the bottlenecks or problems of a given production (the plan, quality, savings, social activity) while others do so to a lesser degree. The existing forms of competition and the principles of its organization have not changed in about 25-30 years. Take the shop's socialist commitments for 1960 and 1985--they are almost the same! In the meantime, during this period there have been essential changes in the organization and payment for labor, technical and engineering support and the management system. And the main thing is the working person, his psychology, his intellect, his way of life and culture. The labor collectives themselves have changed a great deal. And we are trying to influence this altered object using the old methods. The result of this approach is simple--the methods will not work.

The press has already noted the problem of the multiplicity of forms of competition in a single collective. Certain people think that it is even good when there are many forms and provisions. But this is good only for the report--they can say we are not standing still, we are looking for new paths. But is it good for the worker? What does a provision lead to when it is simultaneously the part of several forms and kinds of competition? In individual, brigade, shop competitions, in the competitions of enterprises of the city and branch, the competition for honorary titles, in 10-day periods, months, watches, shock work and anniversary projects? There is only one answer--it leads to an erosion of the goals of the competition and to a loss of the main thing--a sense of personal participation in the competition.

The competition actually has no beginning or end. It goes on from 1 January through 31 December, and it begins and ends only symbolically. Under these conditions it generally loses all meaning, especially in the everyday awareness. How can one "vie" and "compete" continuously? In large purely sports competitions that last more than 2 weeks there is a sharp loss of interest among the competing teams. The excitation of living energy and the feeling of competition cannot exist infinitely, irrespective of the specific psychological basis. Something else appears which cannot even approximately

be called competition. And if the goals of the competition are eroded? In spite of the constant criticism and proof that equalization and the distribution of bonuses for winners of the competition (100 rubles per shop) does not provide incentive--this principle is alive and well everywhere. As a result, each year immense funds are spent and they do not affect the competition at all. They are spent without stimulating a single aspect of it.

I think that competition should be individual, a competition of individual persons. We need a new approach to the competition, one that takes into account the specific features of the changing conditions in light of the tasks set by the 27th CPSU Congress. In our opinion, this should be the target approach.

The first thing that needs to be done is to make the competition instrumental in nature.

As we know, an enterprise needs not just any activity on the part of its workers, but only that which serves to achieve production, economic, and social goals. Competition is one of the instruments in the set of means of management used by the managers. It can augment, but by no means can it ever replace other forms of management. For correct utilization of competition as an instrument of management, it is very important to have criteria for evaluating the effectiveness of its application in reality, that is, to be able to promptly establish the reduction of its "sharpness."

In the second place, since we are speaking about selective incentives for forms of activity it is necessary to learn to create the corresponding conditions and a situation in which rivalry and competition will manifest themselves and to find forms of instigation and maintenance of activity and creative initiative, without which there can be no real competition.

Hence follows the next aspect of organization, which is related to increasing the degree of specificity of the objects of the competition. For each goal, whether it be production-economic or social, it is necessary to determine categories of workers on whom successful realization depends to the greatest degree, and these are the people who must be enlisted in the given kind of competition.

And the last thing is the development of effective technology for management of the competition as a system of concrete actions with which one could provide for prompt and reliable evaluation of the condition of the processes of competition and their high-quality planning and effective regulation.

Today we are doing a large amount of work in all of these areas. We have conducted the first, promising tests and I think that there is reason to believe that we will manage to make the competition more effective. There are leagues at the enterprise into which the brigades are joined depending on their labor indicators. The bonuses are distinguished in the same way. Each brigade can be dropped to a lower league or raised to a higher one. The competition has become more active. But this still requires further development.

And in general I must tell you that in working with people it is important for them to decide the destiny of the enterprise and know how it will develop.

In 1985 we fell into the most difficult situation. We were given essentially a double plan for the production of children's dresses. We exerted heroic efforts in order for this planning confusion not to hit the collective. My young deputies conducted themselves worthily in this situation. But all the "heroism" cannot take away the harm caused to the collective. It was necessary to work on Saturdays. In the collective there was a lack of confidence that the situation would stabilize. After all, the people had adopted the plan and discussed it, and this turned out to be in vain, and they were deceived in their expectations. There was a lack of confidence that their opinion would have anything to do with the destiny of the enterprise. Not to make fools of people, but to inspire them, to disclose their creative capabilities--this is our task. And all of the restructuring at the enterprise--our organizational structure, the work of sociologists, the automated system for the achievement of goals, the activization of competition --is directed toward this.

#### FOOTNOTE

1. Concerning the block structure of management see the article by A. V. Pavlova in this issue.

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## NECESSARY CHARACTERISTICS OF LEADER ENUMERATED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 5, May 87 pp 17-23

[Article by L. Shcherbakova: "The Features of a Leader"; capitalized passages printed in boldface in the original]

[Text] Meetings in Tiraspol

The thing that immediately strikes everyone who has come to the Tiraspol Sewing Factory for the first time is the family feeling. In the best sense of this word. This is maintained both by the fact that many workers at the factory have been there for many years, and by the fact that the children and grandchildren of the first workers are working here now. Here are only three meetings, three people and three destinies.

DRAGOBETSKIY, IVAN MIKHAYLOVICH, ONE OF THE BEST MARKERS IN THE ASSOCIATION. A marker is a person who transfers parts of clothing from a pattern to the fabric. He has been working at the enterprise for 25 years. Ivan Mikhaylovich is of pension age, but he does not wish to leave the factory: as he says, he has everything he wants here. Each year he has a free or a bonus pass (at the expense of the trade union). He has vacationed in Truskavets, the Transcarpathian area, Latvia, Yessentuki and Zheleznovodsk, and he has sailed down the Volga. His wife also went on pension from here (she worked 23 years at the factory). "Every good worker," says Ivan Mikhaylovich, "can feel the effect of his labor here."

I also like the interrelations in the collective. There are differences of opinion on the production plane, but we resolve them rapidly. And in general I would say that if you try not only to take from the enterprise but also to give to it everything you can, if you understand that it is difficult not only for you but also for the management and you meet them halfway, everything will work out well for you.

Many young people have not yet understood this and they want only to take advantage of the benefits, but they do not like to work. They do not even use their work time as it should be used. At the beginning of the shift, they are not at work yet and I am already beginning to produce products. At the end of the month, their earnings are 100-150 rubles and mine are 300-350. Of course,

then they are dissatisfied. In general one can work as long as one is healthy.

SPLAVSHIYEVSKAYA, LYUDMILA STANISLAVOVNA, DIRECTOR OF THE ASSOCIATION'S COMPANY STORE. She has been working in the association for 19 years. She came in as a seamstress when she was 16, and then completed the tekhnikum by correspondence and worked as an engineer for studying demand. In 1985 she completed the VUZ (also by correspondence). Honestly speaking she did not want to study but the factory management literally forced her first to enter the institute and then to complete it. Now she is the director of the new company store. It is young and has been in operation for only 2 years, but the time for a company store to get established, as a rule, is 3-4 years. So for the time being it is difficult for the workers, and mainly for the director.

They subsidize the store, understanding that there is no other means of learning to swim than to get into the water. The association's general director checks on this work. V. S. Solovyeva, who always stops into the store on her way to the enterprise and her production deputy, whose department has jurisdiction over this store. The store is one of the shops of the association, although, to be sure, it is a special one: that is the way the issue is formulated here. "Everywhere, including in our planning sessions we say that our store is part of the association. And we feel that we are one of its shops," says L. S. Splavshiyevskaya. "Along with the name, we have adopted and try to cultivate in the store the style of management adopted in the association, the style of interrelations in the collective, and the principles of work with people. So the factory has given me personally almost everything I have: work, education, and even many views and principles of mine have been developed here."

The wholesale store here is a testing ground for new items or those that are planned to be put into production. All the high-fashion jackets and dresses are tested in the store. An experimental batch is sent here and then later the products are sent to other stores of the republic and to Moscow. The store has a merchant who studies demand. He uses diverse forms of questionnaires--concerning future fashions that are to be exhibited in the store and will be put into production a couple of months later; experimental batches of new fabrics; and test batches. He also studies the consumer flows and reveals unsatisfied demand. Twice a month there are exhibit-reviews of items. On the basis of all this work the store gives the entry prize information about what the consumers like and do not like, the quantity in which products should be produced or if the products should not be produced at all. They listen to this opinion. Thus in 1986 recommendations were made not to put six fashions into production, and this advice was followed.

Specialists from the association--engineers, designers, fashion designers--are always on duty in the store, according to a special schedule. The conferences for studying consumer demand are always interesting. Lyudmila Stanislavnova found herself in this interesting, content-filled, and very necessary work.

VALENTINA ANATOLYEVNA VYSOTSKAYA, DEPUTY CHIEF OF THE DIVISION FOR SCIENTIFIC ORGANIZATION OF LABOR. Many years ago she came home to Tiraspol for a while.

In order not to sit around doing nothing she got a job as a sewing teacher in the association, where her mother was already working. This time was extended up to 24 whole years!

Why did she stay? Mainly because she began to perform complicated operations that had tormented other seamstresses for a long time and it was simply a pity to leave the collective. This was an especially bright period in the history of the factory: the collective was fighting for the title of Collective of Communist Labor. This later became the Movement for Communist Labor, and then...interesting undertakings, small brigades of 20-25 people, with the brigade leader and Papa and Mama and close friends. Here it was impossible to sit in one's corner and remain silent--everyone was on view.

Having worked somehow unnoticed for about 2 years, Valentina Anatolyevna understood that she would not leave, the more so since her earnings were good, at home they began to regard her with respect, and she began to have a feeling of her own worth. While previously she was led around by the hand both in school and in the institute, now an interesting adult life had begun for her. The young worker's activity was noticed and they appointed her brigade leader. And then Valentina Sergeyevna entrusted her with the organization of intake control of the quality of raw and processed materials. A physics and chemistry laboratory was created whose workers concentrated their attention on those properties of fabrics which affect the quality of the items when they are being used. And then this same Valentina Sergeyevna appointed Vysotskaya to handle the system of product quality control.

"My path is not exceptional for us here in the association," says Valentina Anatolyevna, "the general practice is for a person to learn as much about the business as he can. Our director has a great flair for innovation and she knows what will be needed tomorrow and in the distant future. This is why in many respects we have been and still are ahead of other related enterprises. In some places in the country work is just being developed and we are either improving it or are better prepared for it. And in addition, Valentina Sergeyevna is able to find creative people. It is not by accident that 70 percent of the managers of our association have grown up here. But first she looks around and gives individual orders and then she sets a task of research. It is possible to come to her anytime and express an idea, being firmly convinced that she will listen attentively. She herself is full of ideas! In general she is able to combine a respectful attitude toward specialists and a lack of favoritism with constant supervision. You work and we will help you, but you are completely responsible for the results of your work. We have the right conditions for self-expression of the creative personality."

This creative attitude, the constant striving to get ahead, the receptivity to the new, the desire to leave their own Tiraspol mark on every job, the enthusiasm, the heartfelt warmth that is so important for a "women's" enterprise are felt by everyone who comes to Tiraspol. The members of the EKO directors' club also felt it when they were guests of the association.

One of them, who was at that time general director of the Novosibirsk Ob' Leather Footwear Production Association and is now the director of the Novosibirsk Branch of the Moscow Technological Institute of Light Industry,

candidate of economic sciences S. M. Zverev, said about this: "If one compares the basic areas of the decree of the CPSU Central Committee and the USSR Council of Ministers of 24 April 1986 and the work practice of the Tiraspol Sewing Association it becomes clear that in many respects it has outstripped other enterprises of the branch. Much of that which is envisioned by the decree has already been tested and is in operation in Tiraspol. I think that the Tiraspol Sewing Association should become a kind of testing ground for developing new areas of work that are promising for the branch, a demonstration enterprise.

"They have something to teach others. This pertains especially to activating the human factor. The spirit of collectivism that pervades their work and their innovation makes it possible for them to steadily stay ahead of others. I observed the reaction of the directors: they were from various branches but all of them liked the enterprise and were completely ready to follow the experience of the Tiraspol workers. But did many of them, for example, form a sociological service? No. Rigid centralization is an impediment to solving many problems of the enterprise.

"The organization of production is wonderful here: although they do not have good equipment the association's collective has reached the output of 24 jackets per worker while a similar Novosibirsk Association produces only 18. In terms of labor productivity the Tiraspol workers have achieved what the Novosibirsk workers plan for the year 2000! And the scientific approach to management? Where else does one see the block-target structure of management in light industry?

Visiting the association is a learning experience for any director. I think that the union ministry should think of ways of establishing consultation ties between the Tiraspol workers and other light industry enterprises: if a small group of specialists were to come to Novosibirsk, for example, and show us how to work and what leading work methods there are--this would have an effect on the workers, on the engineering and technical personnel, and on the managers."

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## STRUCTURE, CONTENT RELATIONSHIP HIGHLIGHTED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 5, May 87 pp 25-35

[Article by A. F. Pavlova, deputy general director for social development and management: "A New Structure--New Content of Work"]

[Text] From Control of Functions to Control of Goals

The first experience in the practical utilization of the target-program methods of management clearly demonstrated that it is necessary to have organizational structures of management that are different from the traditional linear-functional ones. Therefore we began to look for a kind of organizational mechanism which would provide for simultaneous implementation of several programs pertaining to the strategy of development of the association's production and social activity.

A condition for streamlining the organizational structure on a target-program basis is that the structure be adapted to the goals, the so-called principle of goal-setting. Therefore the first thing, the one with which the process of rearranging the structure begins, is clear determination of the goals of the activity of the enterprise or the construction of a "tree of goals." Taking into account the enterprise as a system, the authors of a number of workers on the target-program approach (Footnote 1) suggest breaking the general goal down into scientific-technical, production, economic, and social goals. Our variant of the "tree of goals" envisions singling out also goals of making a living and creating resource, technical and economic-domestic blocks.

But the very nature of the goal still does not give a clear answer concerning the condition of the structural subdivisions. It is necessary to take a thoughtful and creative approach both to the development of target declarations (what to achieve?) and to the development of target technologies (how, in which way?). And here a mandatory condition for successful restructuring of management is including the collective. For this kind of restructuring does not simply straighten out the subordination of the subdivisions to individual managers; it demands of each person a deliberate changeover from management according to functions to management according to goals. And the efficiency of the restructuring from the ordinary reactive,

emergency style to an institutional, target style will depend primarily on the active participation of each manager and specialist.

Of all the largest innovations carried out in the collective during the past 10 years, such an organizational-management innovation as the creation and introduction of the block-target structure of management has been the most complicated, both on the procedural and, especially, on the psychological plane. What is the block-target structure and what advantages does it provide?

The agency that determines the composition of the goals in the block-target structure is the target block. It is the totality of sections, subdivisions, and positions that have been reoriented toward new goals or are specially created. Eight target blocks have been created: engineering support; production; economic; social; quality control; resource support; technical and power service; and domestic-household.

As distinct from the matrix structures that are constructed according to the principle of dual jurisdiction, in the target block preference is given to one-man management. Every target block is headed by one of the deputies of the general director. He has the resources necessary for implementing the target program, has been given the necessary rights to utilize them, and bears complete responsibility for the effectiveness of the activity of the block and its interaction with other blocks within the framework of achieving the general goal of the association's activity.

The internal structure of the target blocks is based on the principle of integration and coordination of various kinds of activity in order to fulfill the corresponding target program. Thus the program for improving the technical and assortment policy of the association is carried out basically by the block for engineering support under the leadership of the head engineer. The economics program for increasing labor productivity and the effectiveness of production--the economic block; the social program--the social block.

I wish to clarify one detail that is concealed behind the word "basically." It is understandable that any program is comprehensive in nature. When its direction remains the same (scientific-technical, social, and so forth) the means, methods and resources used to achieve the final goal change. Therefore the variable part of this program each time also includes a certain part of the new subdivisions which act as pulsating, dynamic units. The adaptivity and flexibility of the entire structure is based on the availability and optimal combination of constant and variable units. The development of the program and operational management of its fulfillment as well as a large part of the work for realizing this product, as a rule, is the work of the manager of the block and the "stable composition" of his specialists. Other workers who are brought in from the outside are included in the implementation of the corresponding program without changing their jurisdiction but changing the nature of their work. Conflicts do not arise regarding this since the problem council establishes a hierarchy of problems, discusses the programs of each block, distributes the resources, and changes the orientation of the work of various subdivisions and specialists in the corresponding blocks.

In our opinion, this variant of adaptation of structures to changing requirements and conditions is better than the matrix variant since it rids the structure of the element of risk. For a stable composition under a single permanent leader is a consolidated, highly skilled and highly organized collective where formal and informal ties have been established. It is precisely this fact that guarantees success in the implementation of any program.

#### How is the Activity of the Blocks Coordinated?

At the level of the association the coordination is carried out by the general director in conjunction with the problem council on the basis of a combination of principles of one-man management and collective leadership. The council includes leaders of party, trade union and Komsomol organizations, and the administration is represented by the leaders of the target blocks. The council is assigned the job of planning, that is, determining what should be done within the framework of the enterprise as an integrated system. It provides an evaluation of the prospects for the development of the enterprise, establishes the hierarchy of problems to be resolved, and determines the nature of the work of each block and the degree of contiguity of the work of all blocks with the "leading" one. On the basis of a technical-economic and social analysis, it determines the desired result and earmarks the temporal sequence of work for achieving a general goal and implementing the programs. Additionally, it distributes the budget and resources, draws up the management documents and develops fundamental decisions.

The block-target structure also makes essential changes in questions of coordination since the independence of the blocks shifts the center of gravity of this coordination from the customary management pyramid of the "vertical" to the "horizontal." The management of the association is left with the main task--to create the necessary conditions for the block leaders to achieve the earmarked goals. This means distributing assignments, organizing a flexible system for stimulating high results, providing the necessary communications, warning about disproportions in jobs directed toward the achievement of group goals, and providing for coordination of actions.

The problem council meets monthly according to a previously set schedule. In the time intervals between the meetings the organizational and executive functions are performed by a group which includes the division for scientific and technical information, the group for improving management and the sector for control of executive discipline. The members of the subdivisions under working conditions conduct a diagnosis of problems, they search for advanced experience, they inform the workers of the decisions of the problem council, they form the composition of adversaries for discussing planning problems, and they prepare information concerning the implementation of the decisions of the problem council.

All questions of intrablock coordination are settled by the managers of the block with the help of the corresponding councils (technical, economic, pedagogical and so forth) and the implementation of the decisions that are made is monitored within the block by the dispatcher of the corresponding block.

The target approach to management essentially changes the requirements on forms and means of operational control and regulation. While previously it was basically directed toward regulation of the production process, now it is directed toward regulation of all activity of the association and the collective. The new possibilities also create new requirements: to warn of the appearance of interruptions. In order to solve these problems, a comprehensive dispatcher service has been created under the jurisdiction of the deputy general director for production. In addition to the traditional group for operational regulation of the course of production, a matrix group has been created as part of it for regulating the preparation and support by joining together the dispatchers of all the other target blocks: engineering, economic, quality control, technical, resource, social and economic-domestic. The attention of this dispatcher group is concentrated on "zones of greatest risk" where there can be sources of deviation from the desired course of work in order that the production process will be stable and rhythmic and the organization maintains a high level of labor activity and a high level of psychological comfort.

Within the limits of each target program control is exercised according to four major parameters: deadlines, resources, quantity and quality. Thus the dispatcher of the engineering block monitors the readiness of production for producing models, the dispatcher of the quality control block--the readiness of the models themselves and the preparation of the raw material. The duties of the dispatcher of the resource block include control over the guarantees of all batching materials for the volume of batches of items that is produced. The dispatcher of the technical service block supervises the entire course of preventive and current repairs and checks to make sure that there is a proper supply of reserve equipment. The dispatcher of the economics block checks on the observance of technical-economic indicators for the models and the fulfillment of daily assignments. For dispatchers of the social and economic-domestic block it is important to check on living conditions as well as the sociopsychological comfort in the collectives. And they try not only to avoid interruptions of social measures, but also to determine where, when and with what "density" it is necessary to introduce social compensators for elevating the mood and the ability to work of the collective during "peaks" of production loading. One of the objects of their joint observation is composed of efficient conditions for work and recreation that include breaks for physical culture, the playing of functional music, the output of radio news programs, the observance of meal schedules, and air conditioning. For specialists of the social block production is a living organism and a prompt reaction to the condition of its "health" is a reliable condition for its reproduction.

Adapting the traditional forms and methods of work takes a fairly long period of time and a great amount, I would say even an exceptional amount of persistence on the part of managers of all levels. But the goal justifies the efforts and means that are expended, and the organization as a living organism acquires the ability to react to any changes and adjust quickly. The percentage of administrative-management personnel here has stabilized and amounts to 7.6 percent while the average for the branch is 10 percent.



## The Advantages of the New Structure

The main thing, in our opinion, is the constant assertion of the "self-correcting target" style of management instead of the "reactive, emergency" style, to use the words of Dzh. Morrissey. (Footnote 2) For regardless of how much one appeals for such a restructuring to the director and head engineer, if an immense amount of current affairs is hanging over their heads like the Sword of Damocles, the appeals remain simply appeals. But the nature of the work of the blocks is predetermined by a system of goals, one of which is oriented toward the output of strategic directions and others toward operational solutions to problems.

Above all the structure envisions a position and the corresponding block of the production director (deputy general director for production), which includes the production shops and productions, and also functional subdivisions (dispatcher service and sales division) that exercise operational control over the course of production and dispatch of products. The creation of a kind of management "filter" between the general director and his functional deputies and production subdivisions immediately solved several problems:

in the first place, it helped to relieve the general director of daily solutions to production problems and enabled him to deal with long-range problems;

second, it made it possible to relieve the head engineer as the first deputy general director of current production and operational technical problems, giving him the opportunity actually to engage in the development of the technical and assortment policy of the association;

in the third place, the distance between management and production was reduced since the service of the production director is a management and decision-making service which takes responsibility for the basic functions of direct management of the course of production.

A successful organizational solution in this block is the dispatcher service itself, which includes dispatchers from each target block. With their help all functional deputies (managers of target blocks) are also relieved of solving operations problems and the monitoring of the fulfillment of target programs is done by dispatchers for management, granting the block manager the opportunity to engage in long-range, and diagnostic problems in his branch. At the same time their discovery makes it possible to reduce the number of emergency situations, which again contributes to the adjustment of the entire organizational mechanism to work under preventive, precautionary conditions.

We must not forget about one other advantage of the block-target structure--the ability to reproduce management experience, the so-called effective self-organization.

We became convinced that under the conditions in which the enterprise is now working, the less regulated the organizational ties are, the more reliable they are. An inestimable number of uncoordinated prescriptions and

instructions fall on the "head" of the enterprise. Unfortunately, their number did not decrease even after the adoption of the recent decisions. Scrupulous regulation of management procedures, the organizational structure, the staff distribution list and so forth and so on simply provoked people to ignore them completely. In spite of the "organizational noise" target management creates the possibility for each manager to solve everything guided by the principle of expediency or simply common sense. This, as a rule, means that the solutions will be more precise and effective. To rely on the professionalism of the manager and create a situation for enterprisingness and justified risk means to contribute to the accumulation of invaluable capital: live human experience.

#### FOOTNOTES

1. See B. Z. Milner, L. I. Yevenko, and V. S. Rapoport, "Organizatsionnyye struktury upravleniya proizvodstvom" [Organizational Structures of Production Management], Moscow, "Ekonomika", 1975.
2. Morrissey, Dzh., "Tselevoye upravleniye organizatsii" [Target Management of Organization], Moscow, "Sovetskoye radio," 1979.

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## ORGANIZATIONAL STRUCTURE EFFECTIVENESS DISCUSSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 5, May 87 pp 30-34

[Article by N. B. Mironosetskiy, doctor of technical sciences, professor, Novosibirsk State University, and G. V. Grenbek, candidate of economic sciences, Institute of Economics and Organization of Industrial Production of the Siberian Branch of the USSR Academy of Sciences (Novosibirsk): "What Determines the Effectiveness of the Organizational Structure"; first two paragraphs EKO introduction]

[Text] At the end of 1985 in Tiraspol in the Sewing Production Association a meeting was conducted within the framework of the EKO Directors Club. A great deal of attention was devoted to organizational structures of management of industrial production, including in Tiraspol.

We are presenting a couple of statements from participants in the meeting.

Plus Computers--Mironosetskiy

With the increasing complicated production ties and the formation of principally new types of associations require adequate management. In this connection the greatest hopes are being placed in target-program methods of management, an example of whose use we find in Tiraspol. But in my opinion they must be based on a powerful information that is used in a number of automated control systems of enterprises.

The development of a methodology for computer planning and management is being held up by a number of factors. We consider the main obstacle to the changeover to automated control systems to be the parallel existence of two control systems at the majority of enterprises: the ASU and the "manual" ones. Many managers see the justification for this in the inadequate level of the ASU, which is correct.

What does the modern system for management of the enterprise and the structure of the management apparatus look like?

1. A system of target-program control is built into the existing line-functional structure.

2. The management workers and production leaders, released from routine work because of their terminals, free up their time for a qualitative analysis of production information under conditions that correspond to the production process in speed and for adopting well-substantiated decisions concerning current management, and the main thing is that they can foresee tendencies in the development of production and promptly develop and implement the necessary measures.

3. Groups (staffs, committees) are organized from authorized representatives and leading specialists for analyzing the key elements of the production process, which use in their activity imitation models under active conditions. Examples of the successful activity of such groups at a number of enterprises show the effectiveness of their activity.

4. The planning of production is done on the basis of a system of economic-mathematical models under the conditions of business games with a developed analysis of the consequences of the drafts of management decisions.

#### Independently of Departmental Jurisdiction--Grenbek

In the organizational structure of management, while the initial line-functional system was retained, the functional component developed and acquired predominant significance. The growth of functional services and subdivisions takes place largely under the influence of the corresponding central functional agencies, ministries, and functional state organizations without directly corresponding to the actual needs of specific associations and enterprises. The organizational structure of the management of enterprises by higher agencies (standard structures, branch and state standards) are regulated without properly accounting for the specific conditions and peculiarities of local operations. Another reason for the irregular growth of functional subdivisions was the system of payment for the labor of management personnel. The Tiraspol workers are experiencing all these same difficulties.

The task of accelerated technical development of enterprises requires the corresponding "readjustment" of the management system at all levels, including improvement of the organizational structures of associations and enterprises. Science offers a long-range patent to this improvement: target structurization. To this end it is necessary to revise the general plans for management of the branches in two areas: the changeover to a two-level system and the creation of comprehensive production associations including production units of various branch profiles, that is, on the basis of existing or planned technological and economic ties, regardless of the departmental jurisdiction of the associated enterprises. Attention should also be given to the variant of creating stable production complexes without administrative unification on the basis of special forms of long-term contractual ties.

There are, however, precedents that show that certain ministries faced with the need to eliminate all-union production associations, wish to solve the problem through reducing the number of objects of management in the two-level system and arbitrarily combine enterprises under their jurisdiction which have

no production ties or substantiated prospects for respecialization for their creation. It is important to allow such "solutions."

A prerequisite for the creation of effective management structures at enterprises and associations is the improvement of their planning and management by the higher agencies: unconditional prohibition of planning "from the level achieved" or the provision of calculated (balanced) planned assignment; the exclusion of all superfluous indicators, not only directive, but also reported (controlled); the rejection of unjustified operational intervention in the affairs of enterprises and the granting of independence to managers of enterprises and production associations. An analysis of the work of certain production associations of the comprehensive type, which already exists in industry, shows that the association of previously independent enterprises that were closely linked to one another by the sequence of technological changes, under the existing conditions of planning and economic incentives, are not sufficiently stable or effective.

In order to ensure the necessary rates of scientific and technical progress in enterprises and associations, we consider it important to have a more clear-cut organizational division and planning-economic shaping of the target-functional block of technical development, headed by the technical director of the association (head engineer). A necessary prerequisite for such a measure is the inclusion in the production program (for the five-year plan or for the year) all jobs (for creating new products, new technological processes, reconstruction and technical reequipment) which should be carried out by diverting resources from basic and auxiliary production. These jobs should participate in the balance of the utilization of production capacities on a level with items of the planned products list.

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ASSOCIATION HEAD ENGINEER INTERVIEWED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 5, May 87 pp 36-41

[Interview with Tamara Nikolayevna Buglova, head engineer, leader of engineering block of Odema Production Association, by L. Kolosova; first three paragraphs EKO introduction]

[Text] In practice we frequently encounter this situation: the collective is fulfilling the plans, it has fairly significant funds for social, cultural and domestic measures, and it is building a lot. But its products are not selling. All the social benefits are given to the collective in advance. But whether it earns them--nobody knows....

Things are different in the Tiraspol Sewing Association. The association's trademark, Odema, has long been known in the country. And at the same time it has almost the lowest fund for social, cultural and domestic measures among the industrial enterprises of the city--about 35 rubles per person, while the average indicator is about 80 rubles. There are enterprises where it is even higher. But yet its products are the best in the Union. The collective's prestige is the prestige of this trademark. Her Majesty the Men's Jacket stands in the most prominent place here. Even when during 1984-1985, because of an unjustified increase in the plan, the enterprise fell into a difficult situation and many practical workers having the wisdom of experience advised sharply reducing the labor-intensiveness of the manufacture of the men's jacket, the collective did not do this.

It is not easy to maintain a high level of items. How this is done in the association and also what is impeding the sewing workers were discussed by an EKO correspondence with the leaders of the technical blocks of the association.

[Question] Tamara Nikolayevna, what new things are the association's engineering services offering in order to improve the quality of men's jackets and increase their output?

[Answer] As you know, in our association we have fashion designers, and all the jackets we sew are designed here, locally. Now we are working on grouping all of our fashions according to design-technological indicators and, on the

basis of this, building up a family of fashions. This will also make it possible to reduce the time period for preparing fashions for production, to achieve greater diversity in them and, the main thing, to reduce the time for putting them into production. Shifting from model to model will not be as difficult as it sometimes is now.

This will also involve a change in the nature of the labor of technologists, who will be relieved of routine work which will be transferred to computers, and they will engage more in the study of advanced methods, devices and quality. We wish to create cutting-preparation sections which will move the products along as on an assembly line. The shops will essentially be assembly shops. We will bring the finishing sections closer to the sewing production so that the workers will be able to have a better idea of the final result of their work. The creation of a unified cutting and preparation production will make it possible to use fabric more efficiently, to conduct a unified technical policy, and provide for stable quality which is close to the model.

The collective is prepared for all high-level tasks, innovations and changes. Our people love changes and are glad to change over to producing new models. Of course we do not let things run of their own accord, we prepare the collective. If we intend to produce new machines, we first send mechanics to learn at the manufacturing plant and then we demonstrate the possibilities of the machine in the shop so that people can know as early as possible what to expect and become accustomed to it. To this end we prepare means of minor mechanization (we have now made more than 3,000 adjustments). Each year we introduce more than 30-40 new kinds of items.

Metrological support occupies an important place in the improvement of the quality of products that are produced. A selection of means of measurement was conducted when preparing new models for putting them into production and 400 strict measurements carried out according to our technical assignments were introduced into production. The arsenal of means of measurement, including the exchange supply, was reduced to 3,000 units. A month or two before we put a new model into production we looked to see what the association's collective must do in order to prepare for its output: what the worker must be taught, what means of minor mechanization are in short supply, and so forth. In this we gain a great deal of help from the system of videotapes of the best labor devices that are used in competitions for worker mastery. We conduct these measures along with the social block. We select operations for which a competition should be conducted from the standpoint of the interests of production, and they organize measures. After that there are even individual schools of mastery led by the workers themselves. Any worker can master the advanced devices either by using the videotape or by working directly with a leading worker.

[Question] Tamara Nikolayevna, in addition to men's jackets you produce items of the children's assortment. This usually involves great difficulties on the financial plane. Items for children are very inexpensive and enterprises are not usually willing to produce them. What approach do you take to these items in your association?

[Answer] We pay no less attention to this than we do to other things. But we should like to have incentives for the labor collectives that produce the children's assortment so that the collectives will receive a certain amount of return and the joy from these items will be mutual: both for those who buy them and for those who produce them. Of course we take advantage of any opportunity to provide incentives for these collectives, sometimes even to the detriment of others, but all these are "underground" methods.

[Question] Now about your interrelations with the suppliers.

[Answer] They let us down a great deal. The suppliers' observance of technological conditions are not yet at the proper level. I have in mind the fabric producers. They cannot carry out their promises because of the poor arrangement of technological processes--dyeing, finishing and so forth. We meet at artistic councils and agree on future models and fabrics so that they will be fashionable, attractive and economical. The suppliers agree with us, but not everything turns out for them in the production process. Sometimes it happens that there are fairly good fabrics for which there is no demand because the technology does not make it possible to make them into what we intend. I should like to have not only artists, but also technologists participate in the development of fabrics and designs. Then it would be clear immediately what would happen and what would not, and then the result would be better. But we, the sewing workers who produce the shirt or robe from this fabric, that is, the final result, take on some of the responsibility of the suppliers. We now maintain close ties with the suppliers, mainly with the Tiraspol Cotton Fabric Combine. This is the young enterprise, although in 10 years it has achieved fairly good results as compared to other combines. This is also clear at the wholesale trade fairs. But the fact that it is young still has an effect, and the cotton fabric combine still must do much work in order to produce evenly dyed fabrics at the level of the Baltic or Ivanovna combines. But we have good contacts with them, the combine is rapidly gathering force, and we are convinced that it will achieve good results.

The lack of accessories is an impediment to us. In our country we have artists for clothing and fabrics, but there are no artists for accessories, even in plants that produce them. We turn to them for help and they say: Give us sketches and then we will make them. But our artists are also dilettantes in this matter. Perhaps it is necessary for the All-Union House of Fashions and the All-Union Institute for the Assortment of Items for Light Industry and the Art of Clothing to take the designing of accessories seriously; after all the cream of the crop of our designers are there. Otherwise each enterprise will do something in a semiprimitive way--and it will be criticized for this: the wrong script, old-fashioned material, and so forth. Perhaps it would be worthwhile to arrange an all-union competition for the creation of models of accessories for clothing. We have the capacities--the large machine-building plants could engage in this, but so far they have not. Perhaps the Ministry of Light Industry should declare this competition? Or a newspaper or magazine, for example?

[Question] We are trying to get in contact with the Ministry of Light Industry and discuss this issue. But I can say right now that your suggestions are very interesting.



[Answer] Our next big problem is the incompleteness of the delivery of materials for an item. The color of the thread is different from the color of the fabric since the color of threads is determined according to one code and that of the fabrics according to another. The suppliers of thread and fabrics should probably coordinate with one another.

[Question] But how frequently do your thread suppliers change?

[Answer] All the time. With rare exceptions, we "jump" from one supplier to another, since there are not many of these factories in the country. There is one enterprise--the Glukhovskaya Factor in Podmoskovye--whose products suit us in terms of color: they dye the threads well. But the equipment there is outdated and they cannot produce high-quality thread. Modern, highly productive sewing machines require thread of the so-called right twist. Thread like this is now used throughout the world. But our factories produce thread of the left twist in the old way. Time is passing but they are not being restructured and so far the ministry does not intend to do this.

[Question] But how is this manifested for you, the sewers?

[Answer] When we use these threads on the new machines we reduce their productivity. The machine loses productivity from the very beginning. The threads break more. It is more difficult for the mechanics to work on the machines. We must explain to the workers why the thread factories have not been changed to a different technology and why when developing the new Orshia machine they did not take advantage of this moment, although we ourselves are confused about this. And workers raise questions directly and frankly. Such situations raise the "temperature" in the shops. We understand the workers: why do we need these planned reductions of productivity? This foolishness has been going on for 20 years, and only a couple of combines that produce thread (the Leningrad, Cheboksarry and Lipetsk) have changed over to producing thread of the right twist.

[Question] Tamara Nikolayevna, you now receive fabric of grades 1 and 2. Will you later produce shirts of two grades?

[Answer] Yes, this is a big problem. The fact is that we have different GOST's. It sometimes happens that it is impossible to use fabric of the second grade to make a jacket (also of the second grade). The fabric might be a slightly different color in various positions from the edge. And if a jacket is cut from this kind of fabric it will be no good. This will pass with the GOST's of the textile workers, but not for us. We sewing workers lose a good deal of work right here, right down to primitive hand cutting.

It is probably necessary to create unified GOST's and a single section for rejection for both us and the textile workers, for more than 80 percent of the fabrics go to the sewing industry. We need a guarantee that we do not need to do the sorting ourselves and that we will be relieved of labor-intensive work.

[Question] And what problems do you have with new equipment?

[Answer] New equipment does not always suit us. I am convinced that the equipment should be domestic, which will make it possible to eliminate difficulties in repair. But the machine builders are in no hurry to reorganize yet. We have now concluded an agreement with machine builders of Orshia (the Legmash Plant). We are acting as the base enterprise for them. We are trying through our joint efforts to show that Soviet equipment for the sewing industry can be just as good as that produced in the GDR, for example. Although, as I have already said, a number of factors are very significant here, including the thread that was mentioned above.

[Question] Tamara Nikolayevna, can you imagine your life without the association?

[Answer] What do you mean, of course not. Here we have a second home, a second family, and a school.

[Question] And do your first families not suffer from this?

[Answer] As a rule, they are also involved in the association. Many managers have children who work here. So they are workers and not spoiled children.

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#### ASSOCIATION PRODUCTION BLOCK MANAGER INTERVIEWED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 5, May 87 pp 41-47

[Interview with Zoya Filippovna Polozova, deputy general director of the Association, manager of production block (Z. F. Polozova is now secretary of the Association's party committee) by L. Kolosova: "A Differentiated Approach Is Needed"]

[Text] [Question] Zoya Filippovna, what are the basic indicators that characterize the effectiveness of the work of your association?

[Answer] As compared to the 10th Five-Year Plan the output of products has increased by 9.4 percent. The indicator of product sales in 1985 exceeded the analogous indicator for 1981 by 1.431 million rubles. Each year the volume of output of products in the highest quality category increased significantly and their proportion of the overall volume amounted to 47.6 percent in 1985 as compared to 12.8 percent in 1981.

One must say that all this took place against the background of increased value of industrial production capital (during the five-year plan it increased by a factor of 1.5). Since these rates are considerably higher than the growth of commodity output (151.3 percent as compared to 104.2 percent), the output-capital ratio decreased. In 1985 labor productivity was 101.6 percent of what it was in 1981. Expenditures per 1 ruble of commodity output in 1985 increased by 1 percent as compared to 1981. This is explained by the increased expenditures on packing the prepared products that are involved with transportation and the growing demands placed on the commercial appearance of the prepared product. But planning assignments for reducing expenditures per 1 ruble of commodity output have been fulfilled each year.

[Question] It is probably unthinkable for your collective to expect an increase in the effectiveness of production without solving the fundamental problem--changing the technical base of the enterprise. It is impossible to squeeze any more out of your equipment and your production areas....

[Answer] That is indeed true. The association's collective is working constantly to introduce into production organizational-technical measures directed toward better utilization of production capacities. The coefficient

of their utilization at the end of the 11th Five-Year Plan was 98.4 percent. The existing lack of correspondence between the capacities of the cutting-preparation production and the sewing shops has had a fatal effect: the area for cutting and preparing is less than the calculated required area by a factor of 2.8. Even under the 10th Five-Year Plan the management of the association submitted a justification of the need to reorganize the enterprise. But it was broken down into several stages and the reconstruction of the cutting and preparation production does not come until the second year of the 12th Five-Year Plan.

The main landmarks in the technical reequipment of our association are 1965 and 1975 when the old type of universal sewing machines were replaced by more productive machines from the Orshia Plant, and we also received our first stitching-whipping machines from the Juki Firm (Japan). After that the process of technical reequipment slowed down and a limited amount of highly productive equipment was allotted. Before 1984 the association had no semi-automated or automated machines for special purposes (for sewing patch pockets, for sewing on buttons with automatic feeders, for making buttonholes on men's jackets with automatic movement of the item, two-needle machines for working on the panels of men's jackets and so forth). During 5 years the process of updating looks like this: in 1981 709 units of equipment were ordered--they allotted 568; in 1982--632 were ordered and 249 were allotted in 1983--544 and 92; in 1984--560 and 315; in 1985--405 and 370.

[Question] Well, what do you use to sew your remarkable jackets?

[Answer] If you are interested in the age descriptions of the technological equipment, they are as follows: up to 5 years of age--37.9 percent of the equipment, from 5 to 10 years--26.3 percent, from 10 to 20 years--32.2 percent, and older than 20 years--3.6 percent.

Technical reequipment at sewing enterprises should be carried out through the introduction into the branch of improved technical equipment and technology. But our experience shows that so far domestic machine building is incapable not only of comprehensive reequipment sewing productions, but even of partial reequipment.

Now the branches acquiring abroad licenses for comprehensive technologies and comprehensive equipment which includes automation of transportation and warehousing operations. This is perhaps expedient. The enterprises that are equipped according to these plans for modern equipment and technology and have modern organization of production will be a step ahead of the others. I think that the introduction of these plans should be carried out in associations that have reached a high technical level and have their own highly trained engineering and technical and labor personnel, for only there will they produce the effect required by the national economy--the achievement of the highest effectiveness while minimizing all kinds of expenditures.

But the most serious attention should still be devoted to improving domestic technical equipment and technology and modernizing other equipment. Today this can be done only on the basis of cooperation with enterprises of a machine-building profile. How do we interest them in helping the sewing

branch? I think that when planning the output of consumer goods by machine builders, one should take into account the fact that they can best make that with which they are professional acquainted: technical equipment, technical means, accessories, and so forth. And the volumes for producing the consumer goods themselves should perhaps be turned over to the sewing workers. Only with such involved mutual relations is it possible to achieve general success (that is, contribute to territorial cooperation between the sewing branch and the machine builders).

I think that it would be worthwhile to get rid of excessively rigid assignment of enterprises of republic jurisdiction to local markets, which leads to despecialization of production (in the various kinds of sewn items). Our association, for example, produces a fairly broad and diverse assortment of products on the basis of the needs of the republic. The most important are: children's bedding, sets of clothing for newborn babies, men's and children's coats made of cotton and mixtures of fabrics, cotton trousers, cotton suits, dresses, cotton robes, including children's. About 88 percent of the products that are produced are sold within the MSSR. But it would be possible to concentrate only on the output of jackets but deliver them to various regions of the country. Regional distribution of products of the sewing branch would lead to an efficient specialization of sewing enterprises of the USSR Ministry of Light Industry.

[Question] Yes, and such specialization would make it possible not to undermine the capacities of the enterprise. I think that in Siberia they would be glad to sell your jackets which have already been in all stores of Moldavia for a long time. And our enterprises would follow after yours. What are you doing to organize production within the association?

[Answer] We are always working to improve the organization and service of the work places, the main goal of which is to reduce the proportion of manual labor in the machine operations. This is achieved through organizing groups of work places, introducing various kinds of organizational and technical fittings that provide for efficient arrangement of the work process, distributing and storing parts, and improving the quality of the items and the working conditions.

The association has created a normative-research laboratory for labor which deals with problems of improving norm setting for labor. Because of the efforts of its workers, for example, branch element normatives for time expenditures were introduced quite a while before the established deadlines. The laboratory is developing progressive normatives directed toward reducing the labor-intensiveness of the items. The success of this work is shown by this fact: labor expenditures on sewing a unit of output in the association have decreased by more than 35 percent as compared to the consolidated branch normatives. The introduction of scientifically substantiated norms by workers of the association has always been regarded not only as an indispensable condition for highly productive and high-quality labor, but also as a criterion for fair evaluation and payment.

When developing the comprehensive plan for improving working conditions for the 12th Five-Year Plan a certification of work places was conducted

concerning working conditions. Plans were drawn up for shops and sections in which they abolished work places and groups of work places with working conditions that do not meet the requirements and norms of labor safety. They pointed out the number of work places and the number of people working in them with the following unfavorable sanitary and technical factors: noise, dust content, gas content, air temperature, and lighting. Work places with difficult physical labor were singled out. Charts of working conditions at work places were revised and new data were entered on them concerning the basic parameters of working conditions and the categories of heavy labor were recalculated. Because of the complete replacement of products at Factory No 2 they drew up a number of new charts of working conditions at the work places with complete replacement of the content of the charts and the corresponding establishment of the categories of difficulty of the work.

The association's sociologists conducted an analysis of illness of workers in the association. They compiled tables on which they ranked the various kinds of illnesses, drew graphs of the illnesses for the various years, and analyzed the levels of illness in the various shops and sections. An experiment was conducted in the cutting and preparation shop on the expedient reduction of colds which envisioned new working conditions and recreation with physical culture and mass breaks, mass use of vitamins, the discovery and treatment of those who were frequently ill, the application of inhalations with sea water, ultraviolet radiation of the nasopharynx, and so forth.

[Question] Your enterprise is typically "female." What personnel difficulties arise because of this?

[Answer] In spite of the fairly difficult production situation, the level of turnover of personnel has practically not increased during the years of the five-year plan, and in 1985 it had decreased as compared to the preceding year: 1985--13.2 percent, 1984--14.9 percent. The losses of working time (leaves with permission from the administration and unauthorized leaves) decreased during the years of the 11th Five-Year Plan from 4,988 man-days in 1981 to 1,180 man-days in 1985.

But the association continues to experience daily difficulties because of the failure of approximately 19 percent of the workers to show up for work. A specific fact about enterprises of the sewing branch is that female labor is used here. It has historically been the case that it is mainly the woman who bears responsibility for the younger generation. Therefore the state, beginning in 1984, granted women with children additional social benefits. This situation was felt especially after the introduction of social benefits with two or more children under 12 years of age: the increased leave for pregnancy and birth, the increased time off to care for sick children and so forth. I think that we need a differentiated approach to the establishment of planned normatives for enterprises with mainly female labor, for otherwise enterprises of the branch will fall into unfavorable conditions as compared to others that use less female labor. It is necessary, on the basis of a statistical investigation of the operation of sewing associations, to introduce permissible norms for losses of working time because of the aforementioned factors, which would be taken into account in the adjustment normative when planning the production volumes.

From the Editors

The experience of the Tiraspol workers is instructive from another standpoint. For many years the enterprise used only internal reserves. Finally it reached a point where it was impossible to advance any more as a result of the human factor alone: the people had squeezed everything they could out of themselves and out of the machines. The enterprise slowed down its rates, it began to stand still, and there was a hesitation which was not slow in affecting the association's prestige in the city. It also hit the collective. The workers could work more and better, but the old equipment and the lack of production space held up this process. And as V. A. Vysotskaya said, when a person can do better but he does not have the opportunity, he feels degraded. This is the kind of degradation the association's collective felt when the reserves stood in contradiction to the capabilities of the collective. No, the Tiraspol workers did not catch up but slowed down their movement, although even now they are far ahead of others. At a branch seminar in Moscow, for example, a worker from one of the enterprises of the branch was awarded a Moskvich car for her high output, and yet her indicators were nothing unusual for the Tiraspol workers.

Forward movement is possible for the association only on the basis of reconstruction and expansion of industrial areas. This plan has existed for a long time but the republic ministry has "noted" it a little bit late. There have been no catastrophes in the life of the association but the hesitation that occurred is on the conscience of the ministry. While it was supposed to be looking forward, it ended up holding the events by the tail.

We are now speaking about restructuring and acceleration. Real restructuring must rest only on a careful analysis. Nothing will change because of zealously applying new terms and concepts. Regardless of how loudly you shout "Candy" your mouth will not be sweet. You must make haste slowly for otherwise you might build up something that will then take a long time to tear down. But once a decision has been made it should be timely, progressive, and directed toward achieving an appreciable national economic effect. All the latest decisions of our party direct us toward this.

On this path it may be necessary first to support the leading enterprises that have achieved great heights and have effective and concrete plans for reconstruction as well as trained personnel and leadership. We must not give a little bit to everyone, for there is not enough for everyone, but it is also wrong to put gilding on backwardness and cover it up with handouts from the state. Not to slow down the movement of the front runners, but to use their example to teach the laggards, developing a strategy of bringing up those who have fallen behind--this is one of the most important lines for restructuring. The experience of the Tiraspol workers emphasizes this once again.

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## SCIENTIFIC-TECHNICAL PROGRESS IMPOSES NEW REQUIREMENTS

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 5, May 87 pp 48-56

[Article by Academician I. I. Lukinov, vice president of the UkrSSR Academy of Sciences (Kiev): "On Several Requirements of Scientific and Technical Progress"]

[Text] In order to double the country's production potential and national income by the end of the current century and to increase labor productivity by a factor of 2.3-2.5 with an essential reduction of energy-intensiveness, labor-intensiveness and material-intensiveness of products, radical technological and organizational-economic changes are needed. Partial solutions will not do for us. During the past three five-year plans we have created a good deal--more than 55,000 new kinds of machines, equipment and apparatus, and more than 34,000 comprehensively mechanized and automated sections, shops and productions. We have created entire new branches of industry, such, for instance, as atomic machine building, the production of the means for information science, we have assimilated large fuel and raw material complexes in new regions, and so forth. All this, while it strengthens our economic might, unfortunately, has not made it possible to overcome such negative tendencies as the reduction of the rates of economic growth, a lack of balance, and the process of rising costs.

The fact is that the prevailing tendencies in partial technological and organizational improvements and improvement of traditional technology, while absorbing large forces and funds and producing an undoubted advantage, still do not provide for a radical increase in the final effect. In implementing the state scientific and technical policy a decisive place should be occupied by system-coordinated large technological transformations and the creation of principally new, flexibly restructuring systems of the resource-saving type. Without this there can be no mention of any serious intensification of the processes of reproduction and circulation.

Life itself has brought forth the modern forms of integration of science and production in the form of scientific production associations and complexes, engineering centers, and large plant scientific and technical subdivisions. Interbranch scientific and technical complexes have originated and are functioning in the UkrSSR Academy of Sciences on the basis of the Institute of



Electric Welding imeni Ye. O. Paton, the Institute of Cybernetics imeni V. N. Glushkov, the institutes of problems of material science, superhard materials, and so forth. Having brought together in one place all units of the cycle "from the idea to the materialization and utilization," they create new technologies with sets of necessary technical means in the shortest periods of time.

Perfected scientific and technical developments, as a basis for scientific and technical updating of production, should comprise a kind of "bearing element" of the plan which is directed toward acceleration of the intensification of the economy. These are by no means partial appendices to the plan, but its essence, which predetermines the rates of reproduction and the final effectiveness. Various kinds of target programs cannot be realized effectively outside of national economic and business plans for resource support and balance coordination in a unified complex of economic and social development.

Acceleration of scientific and technical progress is linked to the need to resolutely overcome the negative tendency of aging of fixed capital, of which, for example, in Ukrainian SSR industry 40 percent is worn out, and in ferrous metallurgy and petroleum processing--50 percent. At the Kremenchug Oil Refinery more than 60 percent of the fixed capital is worn. It costs more than 10 times more for capital and current repair than it would to replace worn-out equipment with new.

The labor-intensiveness and production cost of products do not decrease this way, and the possibilities of increasing the effectiveness of production are essentially not utilized. During the past 5 years the average annual removal of machines and equipment in the metallurgical, chemical, and machine-building industries amounted to only 2 percent, and in light and the food industry--about 3 percent. New equipment that came in was used mainly to create new work places, thus exacerbating the problem of the shortage of labor force and lowering the coefficient of shift work of enterprises. The prevalence of this essentially extensive direction of industrial development has entailed negative tendencies toward increased costs, increased capital-intensiveness, and reduced rates of recouping one-time and current expenditures.

In keeping with the aims of the 27th CPSU Congress, it is intended to double the rate of fund updating for the current five-year plan, keeping in mind, above all, the qualitative side and the introduction of resource-saving technologies with a closed cycle. We are speaking about bringing the coefficient of renewal up to 4-6 percent, but even this is clearly inadequate with the existing structure of capital, especially in the group of enterprises with outdated technical equipment and technology.

I shall give the data from a selective investigation conducted by the UkrSSR Central Statistical Administration in 1985 concerning the effectiveness of capital investments in new construction, reconstruction, and technical reequipment at 68 enterprises and facilities of the republic. Of the 1.9 billion rubles' worth of overall investments for these purposes 69 percent went for new construction, 15 percent--for expansion, 15 percent--for reconstruction, and only 1 percent for technical reequipment. It took an

average of about 6 years to construct the facilities while the normative according to the plans was 4.7 years, for expansion it took 4.6 years instead of 3.3, and for reconstruction--4 years instead of 2.4.

There were 20 facilities that were put into operation ahead of schedule, within the normative time periods, but 48 significantly exceeded the planned deadlines, including 15 objects that took twice as long, and the rest of them were constructed or reconstructed in time periods that were 4-5 times longer than the established ones. The actual effectiveness of investments on an average for all of the facilities investigated was at a level of 6 percent of profit as compared to investments while it should have been 15 percent according to the plans and 14 percent according to the normatives. All this is the result of the late startup of the majority of facilities, their inadequate quality, the fact that the estimated cost was exceeded, and their technological imperfection.

At the same time we have excellent experience in high effectiveness. For example, expenditures on the construction of the first section of the Yuzhnyy Ore Enrichment Combine in Krivoy Rog were recouped in 2 years. Investments made at five other enterprises that were investigated were reimbursed in 2.5-3.5 years. These were precisely the facilities at which the managers and specialists and labor collectives promptly put the production capacities into operation and rapidly assimilated them, effectively utilizing the advantages of the technological and organizational updating.

Against this background there is nothing that can justify, say, the fact that the dairy in Shostka, according to the plan, was to have provided for an annual profit in the amount of 2.3 million rubles and actually "achieved" a 22 percent loss. Because of the fact that many of the enterprises did not reach their planned level of output volumes, quality or production costs, they failed to receive 948 million rubles in profit, which is almost twice as much as the profit that was actually received and comprises half of all the investment expenditures. Moreover, the overall time period for recouping money lasts up to 16-17 years instead of 7-8 according to the plan.

In addition to the technological imperfection inherent in the plans that are carried out, the causes of the low effectiveness also include the shortage of raw and processed materials, the irregular supply of energy and water, the shortage of personnel and personnel turnover, difficulties with sales and the incomplete portfolio of orders. All this actually does exist, but it is subject to precise calculation in planning and elimination during the course of operation. To accept imperfect, economically unsubstantiated plans for production means nothing other than to deliberately allow senseless waste of public labor and resources.

From the economic standpoint it is completely unjustified when the process of reconstruction of many machine-building giants (the Gorkiy Automotive Plant, the Volgograd and Altay Tractor Plants, the Leningrad Machine Tool Building Plant, Uralt'yazhmash and others) has taken up to three and sometimes even up to five five-year plans. The technical solutions included in the plans have become incredibly outdated by this time. Under these conditions the enterprises have no periods of efficient and rhythmic operation.

The plans, as a rule, should include the latest technologies. Under conditions where these are not industrially assimilated accounts should be kept for contractual orders for new technical equipment during the period of planning and construction work. For in and of itself the replacement of old equipment with similar new equipment does not make radical changes in the productivity or effectiveness, and sometimes makes production more expensive because of the tendency for wholesale prices for new technical equipment to increase more rapidly than the growth of its productivity. There are many examples of this. The production cost and wholesale prices are increasing for many kinds of agricultural equipment and objects under construction with considerably lower rates of increase in their productivity, which leads to an unequivalent exchange and increased cost of the production of agricultural products. This pertains also to the production of technical equipment for light and the food industry which, moreover, is frequently produced with a low level of quality and reliability.

The USSR State Committee for Prices, when checking on the correctness of the establishment prices for industrial robots, discovered that in only three out of 10 had there been a reduction of the production cost of products produced with them. And in only two cases did the actual effect correspond to the calculated one that was adopted when establishing the wholesale prices and incentive increments. There was practically not a single consumer plant that calculated the real effectiveness from the application of the robots.

Undoubtedly, the production and utilization of robot equipment, especially in combination with flexible production systems, promises a revolutionary change in productivity and effectiveness, quality and reliability, resource saving and the production cost of the items that are produced. But then, of course, we need not only technological, but also organizational and economic measures, without which no plan is worth its salt.

As a result of the lack of clear-cut substantiations the plans are frequently reworked and reapproved even during the course of their implementation, and taking into account the excessively prolonged investment time periods, they simply become outdated. It would be good if the planners, taking their responsibility seriously, would rework them promptly. In this case the effect could be increased. But for a number of plans, after their operational revision during the course of reconstruction, the production of products and incomes increased by 15-20 percent. When the plan for the construction of the medical instrument plant in Odessa was being reestablished, for example, the planned volume of output was increased by 46 percent and profit--by 29 percent, and for the Borislavskiy Factory for Nonfabric Materials in Lvov Oblast these materials were 75 and 20 percent, respectively. And in places where the plans are not revised this way, everything is done from outdated plans, and the final effect turns out to be either extremely low or nonexistent.

The average return of capital investments from reconstruction, expansion and technical reequipment at the enterprises that were investigated during a year of operation amounted to 10 percent, and at the newly introduced construction projects--only 4 percent. The indicators were extremely modest and, judging

from the best examples, they could have been doubled as a result of elementary observance of normative time periods for startup and assimilation, although they are largely outdated as well, and the amounts of the cost of facilities, as well as operational expenditures.

The anti-expenditure mechanism should fully preclude paradoxes in which the evaluation indicators of economic activity "urge on" the managers, and the labor collectives "chase after" gross volumes through a costly assortment and the utilization of expensive components instead of striving to reduce prices, reduce production cost and reduce the material-capital-energy-labor-intensiveness of items. After all, a phenomenon like this, for example, is absolutely abnormal. The Cherkassy Machine-Building Plant changed over to the output of new cooling and heating installations with the trademark KhMF-16, which has a resource of working time greater than the previous one by a factor of 1.5 and consumes 12 percent less electric energy, and at the same time the wholesale price set for it led to a reduction of the cost accounting profitability by a factor of 2--from 26 to 13 percent. After this who would want to work on improving the quality parameters and reducing the prices of their items?

In the country's national economy, as a result of the irregularity of scientific and technical progress, the concentration of the resource potential in the priority areas, and the development of high-income spheres, an extremely variegated picture has developed with respect to the levels of technological perfection and capital- and energy-availability for labor in the various branches and groups of enterprises. Hence also the spottiness in the levels of labor productivity and income as well as the overall effectiveness of management. The formation and utilization of monetary funds of the state budget act as a powerful regulator of the distribution relations and the equalization of socioeconomic conditions for the life of the society. Herein lies one of the most important advantages of the socialist system of management, but it, in turn, when it goes beyond economically substantiated limits, entails extremely negative consequences, "leveling," the dampening of cost accounting interests in acceleration of scientific and technical progress and intensification, and a drop in the rates of renewal and the growth of effectiveness.

One of the key problems in the improvement of the economic mechanism in light of the aims of the 27th CPSU Congress, in my opinion, is the achievement of optimization of the price and nonprice (financial-credit) regulation in their organic unity and the overcoming of subjectivism in the complex distribution relations. The changeover of state enterprises to conditions of complete cost accounting, self-financing of investments, and the creation of other intrabusiness funds requires, above all, an elimination of deficit operation and low profitability in individual kinds of productions, groups of enterprises and associations, and the creation of stable economic conditions for cost accounting activity. Here the interests of the state budget must be reinforced.

The price mechanism, as the most sensitive instrument of the law of value, should play a more active role in stimulating innovations and intensifying the reproduction process in a planned regulated line of development. If one is to

speak about the economy of the UkrSSR and overcoming its greatest "bottlenecks"--in the coal and metallurgical industry and the agroindustrial complex--one should first of all take resolute measures for accelerating technical reequipment of mines and metallurgical plants and changing them over to modern technology.

At the same time, in order to eliminate the large amounts of subsidies and budget financing of the coal industry, it will obviously be necessary to return again to the prices of coal, particularly in the Donetsk Basin, and bring them in line with its actual value. A negative influence is exerted on the deformation of the budget by the growing subsidies for meat and certain other kinds of food products, housing and municipal services, and certain objects of culture. All this is brought about, on the one hand, by the unjustifiably growing outlays per unit of output as a result of the fact that scientific and technical progress has not yet been turned into a factor that reduces cost and, on the other, by the lack of price regulation and the lack of the proper flexibility of prices.

When restructuring the economic mechanism, it is necessary to avoid situations in which the economic position of certain enterprises turns out to be free of care while the situation of others is extremely fragile and unstable. Just take the good example of the Sumy Scientific Production Association imeni Frunze which was changed over to complete cost accounting. With an annual profit of 91 million rubles it has a fund for development of about 30 million rubles, with 100 percent of amortization deductions included in it and up to 20 percent of the profit. This provides it with the proper maneuverability and rapid updating of capital.

At the same time 415 production associations of the food industry of the UkrSSR Gosagroprom, with profit received under the conditions of the economic experiment of more than 1 billion rubles and about 2 billion rubles in budget subsidies through turnover tax, deduct only 69 million rubles into the fund for development, including 15 percent of the amortization deductions and 3 percent of the profit. On an average for one registered production association (enterprise) there are only 162,000 rubles, which, understandably, is far from enough. And even from the budget for centralized financing of capital investments they receive extremely limited funds. It is obvious that in order to change them over to complete cost accounting it is necessary to radically change the economic relations with the budget and create real prerequisites for work under the principles of complete cost accounting and more rapid rates of technical reequipment and technological restructuring of production.

Take, for example, Ukrtrikotazh of the UkrSSR Ministry of Light Industry. In 1985 the branch was operating under ordinary conditions and 29 percent of the amortization deductions were transferred into the budget, but in 1986, with the changeover to the new methods of management, this proportion of the deductions increased to 88 percent. The very economic nature of the amortization fund is such that it is organically linked to the activity of the enterprises. Unjustified withholding and centralization of it only undermines the foundations for acceleration of technical renewal.

In economic regulation it will be necessary to overcome the kind of abnormal situation in which the most highly profitable branches, including light and the food industry, end up in the worst economic position, which leads to an aging of their capital, a lack of cost accounting maneuverability and initiative, and a retardation of their further growth. This, naturally, impedes increasing both economic and budget revenues. The wisdom of the entire financial policy consists in a correct determination and precise calculation of the areas for investments and expenditures in order to have the greatest return and maximum augmentation of cost accounting and budget resources. The changeover of the entire socialist economy to new economic conditions requires an immediate resolution of these major issues in improving the economic mechanism.

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## COST-ACCOUNTING PRACTICE REVIEWED

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[Article by S. P. Pervushin, doctor of economic sciences, Moscow, Institute of Management imeni Sergo Ordzhonikidze: "Complete Cost Accounting--Organizational and Methodological Foundations"]

[Text] The idea of changing over from partial and, in a number of cases, formulaic cost accounting to complete, comprehensive cost accounting was expressed in party documents in connection with the restructuring of the methods of management and planning in 1965-1966 as one of the conditions for increasing the role of economic methods of management of the national economy. But neither during that period nor in subsequent years in theory or in practice was it made sufficiently clear what the content of complete cost accounting is or what the nature of the organizational and economic measures directed toward changing over to it might be. The pregress debates and discussions of ways of improving the economic mechanism at the 27th CPSU Congress enriched our ideas of the essence of complete cost accounting and made it easier to find ways and forms of manifesting it. Yet in science and popular literature, as well as in economic practice concerning the essence and forms of manifestation of cost accounting, extremely contradictory ideas are widespread. Certain people think that the changeover of enterprises to self-supporting production means also a changeover to complete cost accounting.

Of course, it is difficult to agree with such an idea. We know that the principle of self-supporting production was one of the first and elementary steps in the introduction of cost-accounting methods of management of the national economy in our country when changing over from the policy of military communism to the new economic policy. Its point was that conditions of management were created for enterprises and economic agencies so that they reimbursed their expenditures from their earnings. The decree of the VSNKh of 11 July 1921 determined that "...in the area of the national economy the state gives nothing to anybody as a gift, the expenditures of the enterprises are covered from their earnings." The realization of this principle had the goal primarily of overcoming the dependent attitudes of enterprises and economic agencies and forcing them to think about what the products they produce cost. V. I. Lenin at that time noted that "trusts and enterprises on cost accounting

are established precisely so that they can be responsible and completely responsible for making sure their enterprises make a profit...." (Footnote 1)

On the other hand, self-supporting production is sometimes contrasted to cost accounting. Thus extremely useful initiatives for transferring associations and enterprises over to the system of self-financing can be interpreted as a system based on three pillars--independence, self-supporting production and cost accounting. In this statement of the issue there is confusion not only about the idea that self-supporting production is a kind of indicator of innovation in management, but also that self-supporting production is separated from cost accounting while it is actually an organic part of it.

The experience in cost accounting relations in our country and other socialist countries and an analysis of various viewpoints regarding this issue make it possible to give an approximate general description of complete cost accounting and a developed description of various constituent parts of it.

The changeover to complete cost accounting, in our opinion, presupposes providing for the totality of the following organizational and economic conditions. The introduction of a management policy whereby all the basic conditions and factors of material production--fixed and circulating production capital, labor and natural resources--are brought into economic circulation and are used on a cost-accounting basis. Increasing the role of final, generalized indicators of enterprises and economic agencies as compared to intermediate ones and overcoming leveling and depersonalization in the receipt and use of income. The establishment of a close dependency between the final results of the activity of the enterprises and associations and those funds they form for the development of production, wages, material incentives, and the solving of social problems. The implementation on a cost-accounting basis not only of simple, but also expanded reproduction within the framework of large economic units and national economic complexes. The spreading of cost-accounting relations to all units of the economic organism along the vertical and horizontal, including territorial agencies for management and planning. Radical changes in the nature of economic relations of the basic production units, on the one hand, and planning and management agencies, on the other, in the direction of granting more independence to the local production collectives in solving economic and social problems.

Each of the aforementioned areas in the changeover to complete cost accounting requires more detailed consideration.

#### Cost-Accounting Principles for the Utilization of Resources

As we know, the point of departure for material production is the natural resources. From these a person gleans objects of labor for subsequent processing, fuel, energy and the most important natural resource, earth, serves as the spatial base for the organization of any production, and in agriculture and forestry the earth is an object and an implement of labor. These invariable factors of material production are brought into economic circulation and utilized primarily on a nonreimbursable, non-cost accounting basis. Here there is no unity under the conditions of the utilization of natural resources. Thus a value is placed on trees on the root and a payment



by the stump is imposed for this. Recently a "price" has set on water in natural sources, and industrial enterprises must pay for water. But water used for irrigation is offered to the kolkhozes and sovkhozes free of charge. There is no monetary evaluation of land or certain kinds of minerals.

The inequality is exacerbated by the fact that many users of agricultural land, mainly state enterprises, make no payment at all for the land. The owners of dachas and garden plots actually use the land free of charge. Such economic conditions for the utilization of nature stand in contradiction to the implementation of the program requirement of social justice and grant economically unequal relations to members of the socialist community with respect to public property.

The difficulties with consistent introduction of payments for natural resources are explained to a considerable degree by the underestimation of rent relations in economic practice, as a result of which natural resources, since they are not created by the labor of man, are regarded as a free gift from nature and therefore it would seem wrong to extend to them monetary evaluations and cost accounting conditions for exploitation. Yet, on the basis of the Marxist-Leninist theory of rent, the question of the principles of socialist utilization of nature on the methodological and legal plane was resolved in the first years of socialist construction in our country. The provision of the law concerning the socialization of the land--"the land without any (overt or covert) redemption fee is turned over for the use of the working people" (Article 2 of the Law on Socialization of the Land)--is frequently interpreted as a proclamation of the principle of land use free of charge. In reality the law refers not to free use of the land, but the transfer of land without a redemption fee for the utilization not of individual people or collectives but of all working people. As concerns economic conditions under which the land is turned over to individual people or collectives for use, the law envisions the reimbursement principle for the use of land: "Surpluses of income obtained from the natural fertility of the best sections of land and also from their more advantageous location with respect to the sales market, is placed at the disposal of agencies of Soviet power to cover public needs." (Footnote 2)

During the past 10-15 years scientific thought has been working on overcoming these incorrect ideas about the principles of utilization of nature both in theory and in practice. Now there are few people who will dispute that the existence of rent relations under socialism is a real basis for monetary evaluations of resources and the payment, cost-accounting principle of bringing them into economic circulation. A number of practical measures have been taken to implement this principle. But the majority of these measures are formal and not very effective. Thus on the basis of the decree of the USSR Council of Ministers of 9 August 1974 a policy was introduced for reimbursing for losses arising when agricultural land is allotted for construction plots. But the practice introduced on the basis of this decree for making reimbursement for losses, because of the imperfect methods of calculating them, is symbolic in nature and does not reflect the actual harm caused to the society by removing fruitful land from agricultural circulation. The main thing here is that the sum of money intended for the reimbursement of the losses includes the estimated cost of construction and is largely covered

through budget allocations for capital investments and is not reflected in the cost-accounting indicators of the future enterprises.

We see the solution to this problem in the consistent application of Marxist-Leninist theory of rent, from which it follows that land rent comprises the basis of rent relations with respect to all other natural resources. This means that economic conditions for the utilization of all natural resources under socialism can and should be based on principles presented in the Leninist law concerning socialization of the land.

In order to implement truly cost-accounting principles of the utilization of nature and introduce complete cost accounting, it is necessary to put an end to work according to rent evaluation of natural resources and develop a substantiated mechanism for accounting for their evaluations when determining the price of prepared products and organizing financial relations between collectives of enterprises and the state budget.

There is a need to consistently implement the cost-accounting principle of the utilization of labor resources. With the existing practice the basic expenditures on the reproduction of the labor force--expenditures on natural reproduction, training and education of personnel, the creation and utilization of the housing fund and municipal services--are made primarily at public expense. The role of cost-accounting enterprises in solving these problems is extremely limited. But the majority of enterprises receive trained personnel and are provided with housing and a social infrastructure, that is, it is actually free of charge. The cost-accounting mechanism for planning and utilizing the wage fund is extremely imperfect, as a result of which its amounts are determined not so much of the results of production activity as by the number and qualifications of production personnel. This nature of reproduction and utilization of the labor force is one of the main reasons for the poor effectiveness of labor and the appearance and aggravation of the shortage of labor resources.

This problem has been the subject of active discussion for many years. In particular, for many years the idea has been discussed of introducing payment for labor resources, that is, depositing a certain proportion of the profit in the form of a tax into the budget for the right to use labor force, keeping in mind that this money will be devoted to the reproduction of personnel. Without disputing the correctness of this statement of the problem, we offer an alternative variant. In our opinion, one of the basic conditions for the cost-accounting principle of the utilization of labor force is strict and consistent implementation of the socialist principle of distribution according to labor, according to its results, and not according to expenditures, so that wages are actually earned. Since with the implementation of this principle of wages some of the newly created value will go into the budget, thus the main cost accounting condition will be met. The experience with noncontract cost-accounting brigades confirms the substantiation of this assertion.

It is also necessary to envision a policy for the participation of cost-accounting organizations in the development and the content of the social and domestic infrastructure and more active and effective participation of cost-accounting enterprises in the process of training and retraining personnel at

various levels of their education. Foreign and domestic experience bear witness to the expediency of such a measure.

With respect to fixed and circulating production capital, elements of their utilization under cost accounting have been manifested since the first years of socialist construction. Thus the circulation and movement of fixed production capital are characterized by the fact that state enterprises are allotted fixed production capital and provide for their simple reproduction with the help of the mechanism for amortization deductions. But for a radical technical renewal or expansion of reduction capital, as a rule, they use state funds as non-reimbursable, nonterm, nonpayment loans. This kind of circulation of capital meant that collectives of enterprises used it free of charge, without reimbursement. The circumstance that all the profit or the majority of it is deducted into the budget was in no way linked either to the level of supply of capital or to how effectively it was utilized. Therefore the collectives of the enterprises were not economically motivated to utilize capital completely, to write it off promptly, or to sell surpluses of capital.

After many years of discussion of this problem, in 1965 a decision was made to impose a special payment for capital, that is, to establish a policy for its utilization whereby some of the profit of the enterprises would annually be deposited into the budget according to a certain normative (6-8 percent of the value of the capital). The justification for such deposits is the fact that any investments are economically justified only if they produce income. Therefore the state, when it allots capital to the enterprise, has a right to count on obtaining income from these investments.

The introduction of the principle of payment for capital had the goal of increasing the economic responsibility for the completeness of the utilization and the effectiveness of the operation of production capital. Unfortunately, practice far from fully justified this idea since when it was realized there were many deviations which nullified the initial idea. But in principle the introduction of payment for capital is a realistic step on the path to complete cost accounting and can contribute to increasing the effectiveness of production with consistent observance of the principles envisioned by this measure.

#### Self-Supporting Production and Self-Financing

The most typical sign of the changeover from partial, frequently formal cost accounting to complete cost accounting is the implementation on a cost-accounting basis not only of simple reproduction, but also of expanded reproduction. The idea of expanded reproduction as a result of internal accumulations was expressed even by V. I. Lenin when changing over to the new economic policy. In the outline for the article entitled "The Commercial Side of the Question" he noted that not only actual and current expenditures, but also accumulations must be paid for.

At the present time this idea is becoming especially crucial because of the fact that the majority of enterprises have large accumulations, a great production apparatus, and development funds, they have high profitability of production, and they have the possibility of utilizing long-term bank credit

on a large scale. On the other hand, implementation of expanded reproduction as a result of self-financing develops the initiative of the collectives of the enterprises and increases their incentive to improve cost-accounting indicators.

When developing and concretizing Lenin's idea with respect to modern conditions, Comrade M. S. Gorbachev at a meeting of the CPSU Central Committee on 11 June 1985 said: "By increasing the responsibility of the associations and enterprises for raising the technical level and economic effectiveness of production and for ensuring high quality of products, it is necessary to give them the opportunity to develop for themselves the means necessary for this and to dispose of them independently...." The 27th CPSU Congress set the task of transforming the development fund into the basic source of technical reequipment and reconstruction, which is one of the forms of the intensive type of expanded reproduction.

The realization of this principle is reinforced in the normative documents that stipulate a policy for the utilization of funds for the development of production whereby it becomes possible through internal funds and long-term bank credit not only to maintain the effectiveness of production capital at the proper level, but also to provide for modernization as well as expansion and technical improvement of production.

The changeover to cost-accounting principles of organization of simple and expanded reproduction in all branches, including the creation of large production complexes and the development of new branches, which cannot be carried out without centralized, mainly budget financing, has the goal of stimulating consistent development of cost-accounting relations and increasing the responsibility of the collectives of enterprises for the results of their economic activity.

It is not difficult to understand that for this kind of cost-accounting activity, self-supporting production is a necessary but not a sufficient condition for complete cost accounting. For complete cost accounting it is necessary to have not only complete reimbursement of expenditures, but also production profitability and the creation of an added product. The need for the production of an added profit and the profitability of enterprises was established in party documents as early as the first years of socialist construction. Thus at the 12th Congress of the RKP(b) (1923) it was stated quite definitely: "The only industry that can be victorious is the one that produces more than it absorbs.... The question of creating added value in state industry is the question of the destiny of Soviet power..." (Footnote 3)

There is no need to prove that the creation of an added product, which under the conditions of commodity-monetary and value relations appears in the form of profit, in our day is no less crucial than it was in the initial period of socialist construction, for in addition to the growing economic possibilities, the tasks of economic and social development have increased to an even greater degree.

## Improving Ties "Along the Vertical"

The development of complete cost accounting presupposes increasing the independence and economic responsibility of production associations (enterprises) as well as their interest in achieving high results of economic activity. One of the indispensable conditions for the development of independence is a change in the nature of the organizational-economic relations between the primary production units and the higher agencies of management and planning, granting the enterprises the opportunities and rights to select methods for carrying out the planned assignments. The realization of this principle of cost-accounting organization of production does not change the foundations of centralized planning and centralization of part of the income of the enterprises, but it does change the approach to the way they are done. Here various variants are possible for expanding the rights of enterprises, but, in our opinion, the enterprises should not be given the "right to select an order," as is suggested by G. Kh. Popov. (Footnote 4) This policy would make unified national economic planning much more difficult. But the enterprise does have a right to count on economic substantiation and provision of centralized resources for state assignments as well as acceptable conditions for sales and, as an equal cost accounting unit, it has the right to demand and receive penalties for failure to meet these conditions.

The right of state agencies to withhold a certain proportion of the income for the budget should remain unshakable, as long as this proportion is clearly determined, substantiated, and is not subject to periodic changes, so that the enterprise will have the opportunity to dispose of the remaining part of the income independently in order to satisfy production and social-domestic needs. Of primary significance here is the degree of scientific substantiation of the plans, which provides for their high stability and relieves the enterprises of repeated adjustments to plans, favoritism, and intervention in operational activity by management levels.

The scientific substantiation of the plans and the granting of greater independence to the enterprises in methods of realizing them presuppose a reduction of the number of directive indicators, and this can be achieved without reducing the role of centralized planning only under the condition that a limited group of value and physical indicators will reliably reflect national economic interests and actually reveal the capabilities and interests of the collective. These goals are served by increasing the proportion of generalizing value indicators that express the final results of the economic activity of production associations (enterprises) and increasing the role of long-term normatives. (Footnote 5)

Since the selection of methods of implementation of plans by local economic units can be dictated to a significant degree by considerations of cost-accounting advantage, it is necessary to provide for realization of the principle: "What is advantageous for the collective is advantageous for the society." One of the real ways of realizing this principle consists in expanding the possibilities and rights of the consumers in forming the quantitative and qualitative characteristics of products that come from the supply enterprises and developing the principle of feedback. In practice a certain amount of experience has been accumulated in having the consumers

actually influence the producers, but it has not become properly widespread or formulated organizationally, and it requires improvement.

It is known that the reaction of the consumer to the goods offered is manifested most appreciably in retail trade in consumer goods in the simplest means of production. If the consumer goods do not satisfy the demand of the consumers, they are not sold. But as soon as the consumer is separated from the producer by a system of intermediate units--supply-sales organizations that plan the funds and "amortize" the reaction of the consumers--the principle of feedback does not exert the proper influence on improving the assortment and quality of products. As a result of this, losses from production of poor-quality goods impose a heavy financial burden on the state budget and, in the final analysis, on the entire society. Yet in practice organizational devices have been tested for reducing the length of the chain of ties from the consumer to the producer. In particular, they consist in having the wholesale trade units, who know the consumers' demands better than various kinds of supply agencies do, formulate the orders directly for the producers and not through agencies of trade and industrial ministries. The experiment conducted in the middle of the 1960's by the Kharkov Wholesale Trade Base for Haberdashery Items showed certain advantages of this method.

But only recently has this idea been given a basis for mass dissemination. The new policy for interrelations between the consumers and producers of goods envisioned by the decrees of the CPSU Central Committee and the USSR Council of Ministers, "On Improving Planning and Economic Incentives and Perfecting Control of the Production of Consumer Goods in Light Industry" and--"On Improving Planning, Economic Incentives and Management in State Trade and Consumers' Cooperation." In particular, it is suggested that the production associations (enterprises) determine independently the volume of deliveries of goods in state plans on the basis of agreements they have concluded with consumers, including with wholesale trade basis. These goals are to be served by the development of long-term direct ties among production associations (enterprises) and the development of wholesale trade in means of production. On this path it seems possible to overcome serious shortcomings in the system of funding supply that has taken form over many years (Academician V. S. Nemchinov called it "the card system of supply"), whereby the enterprise does not have real possibilities of influencing the assortment, quality, price level or delivery dates for products. The consumer can be seen, perhaps, only in ordering more means of production than are actually necessary, for supply, in order thus to reduce the dependency on the suppliers and supply agencies.

In the prevalence of this practice between producers and consumers lies one of the basic reasons for the poor quality of products produced by industrial enterprises, beginning with the immense surpluses of means of production accumulated in warehouses of supply agencies and enterprises. Thus during the past three five-year plans circulating capital in material reserves has increased considerably more rapidly than the production of the national income has. It has been calculated that at the present time surpluses of circulating capital amount to about \$130 billion rubles--more than 30 percent of the overall volume of them (IZVESTIYA, 18 December 1985). Such a practice, of course, cannot contribute to increasing the effectiveness of production, economizing, or improving cost accounting relations.

But the paths and time periods for solving this problem have not yet been determined or concretized.

#### Cost-Accounting Relations Along the Vertical and the Horizontal

The changeover to complete cost accounting presupposes extending cost-accounting relations to all units of the production system along the vertical and horizontal, and increasing the cost-accounting independence of production units which, in turn, means improving the organizational structure of production, particularly strengthening primary production units and improving their internal organization. The basic directions for solving this problem that have been developed by practice are included in the development and improvement of the organizational structure of production and scientific production associations and interbranch scientific production complexes. Also directly linked to these are measures for simplifying the hierarchy of management agencies and changing over, as a rule, to a two-level system of management. The many years of the process of concentration and centralization of production have created favorable organizational prerequisites for solving this problem. The creation of production associations contributes to a situation where the basic functions of operational management of production can be gradually turned over to their jurisdiction, thus freeing the time of higher agencies (branch ministries) for solving large strategic problems. Under these conditions prerequisites are created for the integration of branch management agencies and also for organizational formation of large interbranch complexes that operate on a cost-accounting basis. At the same time there will inevitably be modernization of cost-accounting principles in the local production units that are included in the associations and development of cost-accounting relations within these production units. During the years of socialist construction we have accumulated a certain amount of experience in the development of intraplant cost accounting. The mass creation of cost-accounting brigades that has been taking place recently shows a new incentive in the development of this process.

But there are still many unsolved problems in the development of cost accounting along the vertical and the horizontal. Especially large difficulties arise when establishing cost-accounting relations between management agencies and those under their jurisdiction, between supply and sales agencies and the production units.

The problem of the development of interdepartmental cost accounting is crucial and complicated. This includes the creation and operation of the production and social-domestic infrastructure, the extraction and use of natural resources, and cost-accounting relations between branch and territorial agencies for management and planning. Yet without changing these relations over to cost accounting there can be no integrated, complete cost accounting. For example, local (rayon, city, oblast) agencies for management and planning that have jurisdiction over labor and many other kinds of natural resources and a large part of the production and social-domestic infrastructure, could exert a great deal of influence on the comprehensive development of productive forces on the territories on their jurisdiction in the event of the establishment of cost-accounting conditions for the utilization of these

factors in material production. But only the first steps are being taken in this area, as a result of which the local soviets and their agencies for management and planning are deprived of the possibility of using cost-accounting levers to influence the character of the development of productive forces. Moreover, the local management agencies themselves in many respects are still lacking cost-accounting foundations for their activity.

Unless we expand the cost-accounting rights when forming the budget itself in the integration of forces and funds of the enterprise located on the territory under their jurisdiction, the task set by the party of increasing the role of local soviets cannot be carried out.

#### Cost Accounting and Commodity-Monetary Relations

The development of various aspects of cost-accounting relations presupposes a deeper recognition and skilled utilization of commodity-monetary and value categories. The principle of cost-accounting management and planning and the ability to compare expenditures and results are unthinkable without the utilization of such categories as value and production cost, price, profit, and profitability. Without money and credit it is impossible to exercise cost-accounting control through the ruble over the activity of the enterprises. In economic practice no number of physical indicators can fill the role of generalizing value indicators. Without them it is impossible either to calculate or to provide for balanced, planned development of the economy. Value categories are invaluable attributes of the expression of the effectiveness of production. This is why each step along the path to development and improvement of cost accounting raises with new force the interest in commodity-monetary value categories. This interest is even more predictable when changing over to complete cost accounting, which presupposes strengthening the finance-credit and monetary system, increasing the stability and purchasing power of the ruble, and improving methods of price setting.

The need for planned utilization of commodity and monetary value categories ensues from all of the experience in socialist construction and considerations of economic theory as well as the teachings of the classics of Marxism-Leninism.

On the basis of Marxist-Leninist theory, which has been convincingly confirmed and developed in the practice of world socialism, the CPSU is consistently adhering to a line toward the development and improvement of exchange relations. This position finds concentrated expression in the new addition of the party Program, which points out the need "to utilize more fully commodities and monetary relations in keeping with the new content inherent in them under socialism, to strengthen the monetary and credit system, to increase the purchasing power of the ruble, to strengthen conditions for economizing and controlling the quantity and quality of the work, and to apply more completely and effectively the entire arsenal of economic levers and stimuli."

This general direction in the interpretation and utilization of commodity and monetary relations is traced through all stages of socialist construction, beginning with the new economic policy. Nonetheless in science and practice



it has still been universally recognized or unambiguously interpreted. Moreover, until recently individual workers of science and practice have attempted to cast doubt on the correctness of the utilization of commodity and monetary categories under socialism. And in a number of cases these attempts are not abstract but completely concrete in nature and cast doubt on the most important directions of the party economic policy, including the line for the development of cost-accounting relations, by contrasting it to the idea of complete centralization in the management of all economic processes, direct distribution and redistribution of income, natural product exchange, and the use of a barter system in economic relations. Moreover it is sometimes suggested that we transform the commodity-monetary categories into report-calculation categories and replace value accounting for labor with an accounting directly in norm-hours. (Footnote 6)

The denial of value relations logically leads certain authors to a denial of cost-accounting methods of management and planning, particularly to a denial of the rights of enterprises to finance current and one-time expenditures from their own funds, and the authors assume that "the principle of self-financing contradicts relations of socialist property and the laws of socialist expanded reproduction." (Footnote 7)

The active rejection of commodity-monetary relations under socialism and the desire to put an end to them as quickly as possible and jump over stages of development that have not been passed through yet ensue from nondialectical ideas about the conditions for the appearance and forms of manifestation of economic categories in various stages of the development of human society and the conditions for their dying out, particularly the manners of considering the essence of money and goods unchanged in various socioeconomic conditions. Since such a way of thinking was typical of Marx's contemporaries, it has been properly refuted in his works. "The vulgar economist," he wrote, "cannot imagine forms developing within the capitalist mode of production that are separate and free of their antagonistic, capitalistic nature." (Footnote 8)

He goes on to concretize this thought: "...If one were to remove from wages the added value, the necessary labor, and the added, specifically capitalist nature, one would no longer be left with these forms, but only their bases that are common for all public means of production." (Footnote 9)

We underestimate the accounting for these theoretical points when understanding the nature of such cost-accounting categories as profit and profitability, the principle of the price of production and the indicator of expenditures brought forward, and also instruments of economic analysis.

All this made it possible to assert that the development of cost-accounting relations, the changeover to complete cost accounting and, on the basis of this, the raising of the level of economic methods of management and planning are directly dependent on the level of development of the theory of commodity and monetary relations.

Thus the changeover to complete cost accounting brings about essential changes in all economic life. And this is quite logical. For cost accounting is a method of planned running of the public economy and therefore its development

and improvement determine to one degree or another the changes in various aspects of the economic organism.

#### FOOTNOTES

1. Lenin, V. I., "Poln. Sobr. Soch." [Complete Collected Works], Vol 54, p 150.
2. "Decrees From Soviet Authorities," Vol 1, Moscow, 1957, pp 407, 409.
3. "KPSS v rezolyutsiyakh i resheniyakh syezdov, konferentsiy i plenumov TsK" [The CPSU in Resolutions and Decisions of Congresses, Conferences and Plenums of the Central Committee], Vol 2, Moscow, Izd-Vo Politicheskoy Literatury, 1970, p 412.
4. G. Kh. Popov, "Effektivnoye upravleniye" [Effective Management], 2nd ed., Moscow, "Ekonomika", 1985.
5. The proposals regarding this issue are developed in more detail by Prof G. Kh. Popov in the article "Complete Cost Accounting of the Basic Unit of the Economy" (EKO, No 7, 1984).
6. PLANOVOYE KHOZYAYSTVO, No 1, 1985, p 60.
7. Ibid., No 5, 1985, p 28.
8. Marx, K., and Engels, F., "Soch." [Works], Vol 25, part I, p 456.
9. Ibid., Vol 25, part II, p 448.

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## TRAINING QUALITY CONTROL URGED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 5, May 87 pp 74-88

[Article by V. A. Romenets, dr of technical sciences, winner of USSR State Prize, prorektor of Moscow Institute of Steel and Alloys: "Teaching a Little Less and Learning a Little More"; first paragraph EKO introduction]

[Text] The line of the 27th Party Congress toward acceleration of socioeconomic development determined the restructuring of higher and secondary specialized education. The result of this restructuring will depend largely on how successfully each VUZ is able to develop and implement the system of measures with respect to its own conditions. This is labor-intensive and painstaking work which can tolerate no superficial formalism. Certain institutes have been conducting similar work on their own initiative for many years now. Thus the Moscow Institute of Steel and Alloys (MISI) is developing a system for controlling the quality of training of specialists over a period of 15 years. We hope that knowing about its experience will be useful to many workers of the higher school.

As is noted in the earmarked radical restructuring of higher and secondary specialized education in the country, the predominance of extensive paths of development has manifested itself in the higher school as well: the continuous and to a certain degree unjustified growth of the output of specialists has not been accompanied by the proper improvement and the quality of their training. Intensification here is the training of a smaller number of engineers who have greater creative potential. It is no accident that certain managers are prepared to trade three specialists who are workers for one who is capable of creative activity.

One of the main obstacles in the training of creative specialists has been the line previously followed by the USSR MinVUZ [Ministry of Higher and Secondary Specialized Education] toward reducing the dropout of students (supposedly in the interests of the national economy). As we know, this ended up in a reduction of demandingness and violation of the regulations of the higher school. The students who had fallen behind were "pushed" from course to course and ended up receiving diplomas. Thus the training process was inadvertently oriented toward the less successful students. One of the tasks of restructuring higher education consists in motivating students to master

knowledge independently under the leadership of the teachers. We are speaking about changing over from a system of education in which the students are only taught to a system in which the students themselves also learn.

The admissions to VUZes are now based on rules that cause the selection of graduate students who are oriented toward the given profession and not toward higher education in general, the "dropout pressure" is removed, the harmful dependency between the number of teachers and the number of students is eliminated, and so forth. This will undoubtedly help in improving the situation in the higher school.

#### Fundamental and Professional Training

When restructuring training it is necessary to eliminate the disparity between fundamental and professional training. This pertains especially to VUZes of a technological profile (our institute is included among them), for whose graduates engineering activity is a continuation of fundamental training as it is for engineers in the areas of physics, chemistry, applied mathematics and so forth. To a certain degree we are assisted in this by courses that provide a bridge between fundamental and technological disciplines (in the MISiS, for example, these include "the theory of metallurgical processes" and "mechanics of a continuous medium").

The main shortcoming of the fundamental training of future engineers, in our opinion, consists not in that they do not have enough general scientific knowledge, but in the fact that they do not make significant use of it in professional training. There are difficulties here. In keeping with the justified instruction of the MinVUZ, university graduates are invited to teach mathematics, physics and chemistry. Of course the level of their qualifications in the corresponding area is high, but they understand nothing at all about metallurgy or the requirements of scientific and technical progress with respect to the concrete branch of industry.

At the MISiS we try to persuade teachers of the various departments to teach fundamental and general engineering disciplines in such a way that they actually become the theoretical bases for the professional training in the specialty, and we are creating conditions to allow this. For example, we apply the justified practice of having teachers of general scientific and engineering departments work temporarily at metallurgical enterprises. This helps them to see the interconnections between fundamental and technological knowledge and to select real material for laboratory and practical studies. In this area there are unified plans for continuous training in fundamental disciplines and a continuous program in the specialty.

In the unified plans for continuous training the main role is played by the process of their development. Here one sees the interaction between teachers of fundamental and profile departments, the juncture of various disciplines, and one can clarify the substantiation of requirements for various kinds of fundamental knowledge of the possibility of acquiring it. Therefore the utilization of these plans without preliminary creative work on drawing them up produces nothing but formalism.

At the present time for teachers in the social sciences, general science and general engineering departments there are aids for metallurgical training and a system is being created for acquiring knowledge in the profile of our institute. All this makes it possible to strengthen the professional motivation of the students in the courses of these departments. The lack of this is the reason for the formal teaching and the mastery of courses without developing skills of applying knowledge in professional activity.

#### The Continuous Program of the Specialty

Many condemning words have been said about the information approach to training whereby the main thing is the transfer of an extensive volume of knowledge to the students. Far from all of this is retained and transformed into abilities and skills simply because of the independent work of the students or practical studies and laboratory assignments. It is sufficient to look at an impressive volume--the collective of programs in the specialty--in order to see merely a list of the knowledge that will have to be mastered by the future specialists. The information approach to training does not develop the abilities to solve engineering problems and make decisions of a complex nature that require a synthesis of knowledge from various training disciplines. Unfortunately, the majority of VUZes have silently presumed that the students will synthesize the knowledge they have received independently, without special training. Experience shows that these hopes are not justified. Production workers continue to complain that young specialists do not have skills and abilities for applying their theoretical baggage. Many graduates even in production do not acquire the qualities of a creative specialist and remain simple workers, thus losing their theoretical baggage.

Since 1973 the MISiS has been using program-target methods of planning the training process and coordinating various disciplines. Various teachers give the same course in different ways. Some are more successful and others are less so. Of course there is a general volume program. But each lecturer interprets it in his own way, adapting it to his own possibilities, capabilities, and views. In order to fill in the "abyss" between the training program and that which is taught and used by the teacher, it was necessary to develop methodological support for training courses on the basis of training-methodological charts and matrices of logical connections between individual disciplines, taking advantage of the experience of the best teachers and the collective opinion of the department. Now we clearly formulate the goals of the course of the whole and of each class; we give the basic abilities and skills which must be mastered by the students and we indicate in which classes and kinds of independent work they are acquired; we distribute time optimally among the individual problems of the program, taking into account the goal and the acquired ability; we coordinate engineering tasks, materials and lectures and practical classes, laboratory work and assignments for the independent work of the students.

It is simply impossible to do this work at the level of verbal discussions. It was necessary to have a special instrument--matrices of logical ties between individual lectures and various training courses.

We know that each teacher considers his subject to be one of the most important. We could argue about this forever. It is necessary to have an objective picture of the significance of the corresponding discipline or the given specialty. We obtain this with the help of matrices of logical ties. On the basis of a collection of training programs in each specialty, the leading teachers indicate in the matrix (table of a special form) the link between the given lecture and the material of the lectures of his own and other courses which are necessary for an understanding of its content. As a rule, there are no difficulties. The consolidated matrix of the training courses of the specialty makes it possible to reveal the logical connections among them throughout the entire period of training. And this is done not from positions of "on what the discipline is based" but "where it is utilized."

Certain teachers were surprised to find out that the information they convey is practically not used in other disciplines. This gives them impetus to think about and restructure their program, methods and content of their presentation. It was already very fruitful to have the very procedure of "overlapping" the goals and the content of the programs of various courses, during the process of which mutual understanding among various departments improved. But far from everyone in the institute approved of the matrices. Drawing them up meant additional work. The greatest resistance came from young teachers who were oriented not so much toward solving problems of their own teaching as toward defending their dissertations.

With the help of the matrices we determined, as it were, the internal significance of a given course for the specialty. This is not enough. We must know how the given discipline will be used by the specialist in his future professional activity. Mathematics, say, will be used less, and in special courses--more, but the matrices of logical connections of disciplines show the reverse picture of the significance of these subjects for the training process. Therefore it is necessary to know the external significance as well. Here we have used the method of expert evaluations. The programs of all courses of a given specialty are gathered into a single book and sent to the leading specialists of enterprises accompanied by methodological instructions for evaluating each section (a 10-point system) for professional activity, taking scientific and technical progress into account. The evaluations that were received were processed and the external significance was obtained. Then, using methods of linear algebra, the internal and external significance were reduced to a single dimension and they determined the overall significance of the course for the given specialty. This made it possible to determine more objectively the volumes of the disciplines and the training material that had to be expanded or reduced depending on the specific specialty.

When drawing up the continuous program one coordinates the goals of the training courses and the abilities, skills and professional knowledge acquired in them as well as the logical sequence of their study. The scientific basis for this program is the interdisciplinary consolidated matrix which makes it possible, using logical ties, to reveal the training material in all the disciplines that "works" for professional training. The continuous program is a compact survey document. It does not reiterate the knowledge "consumed"

from within each discipline. For instance, some of the course in mathematics is necessary for an understanding and a substantiation of another part, but there is no access to the solutions to engineering problems.

Thus the pivotal point of the continuous program is professional knowledge necessary to the future engineer. Around this pivotal point are grouped material from all disciplines that are not for direct professional purposes. The continuous program makes it possible to clearly determine the direction of each training course, the abilities, skills and knowledge it provides, and the interconnection between fundamental and professional training, and to make a substantiated choice of the training material for the lecture, taking into account the increase in time for the independent work of the students. The continuous program facilitates the coordination of the training of engineers in individual specialties with the consumers of personnel.

#### Organization of Independent Work of Students

The restructuring of the training of engineers brings to the foreground the independent assimilation of training material. In our opinion, here it would be expedient to reduce the mandatory training classes of students, but not change the practical and laboratory parts. We are speaking about lectures which now take up approximately half of the time for theoretical study. The least painful path is to change over from 2- to 1-hour lectures. In order to avoid infighting and sharp resistance from the departments because of the reduction of the training load in hours, it would make some sense to calculate it in the previous volume according to the number of academic hours. The Moscow Institute of Steel and Alloys has been working successfully for a fairly long time with a shorter academic hour. This made it possible to organize the work day of the students more efficiently and to free up more time for their independent work. We have not seen any negative results. Unfortunately, at one time the MinVUZ forbade us to do this work.

When changing over to lectures consisting of 2 academic hours with an overall length of 1 astronomical hour it is necessary to reduce the volume of program material not related to the development of engineering abilities and skills (we are speaking about social sciences) and refrain from the fairly widespread descriptive presentation of information in the form of formulas and make the presentation of problems the norm. The lecture should be a real guide to independent work on the part of students, which should be properly organized under the leadership of the teachers. Otherwise the time that has been freed up will be wasted.

Now the students study the lecture at best after it has been given, and more frequently during the period of tests and examinations. It would be desirable for them to preliminarily study the subject of the corresponding lecture and prepare promptly for practical and laboratory work. Then the lecture could be devoted to an explanation of the complicated areas, a formulation of problem issues, and recommendations for further work on the corresponding material. For key questions of the course throughout the semester it is useful to have thematic consultations of lecturers.

But it is easy to say that the students should prepare for their classes. But they do not.... It is necessary to organize this preparation. In the first place, they should fully provide educational literature for all disciplines (courses of lectures, laboratory practical work, aids for practical studies, course plans, homework assignments). The corresponding sets could be obtained by the students for individual use in the MISis library. In the second place, it is impossible to do without checking on the readiness for classes. For these purposes we have adapted display classrooms that provide for dialogue. Laboratories equipped with costly equipment, of which there are not enough for everyone, are now being used more productively. If a student is not ready for laboratory work he must do it outside of class hours.

In the MISis it has become customary to have semester training schedules for independent work which indicate the average time expenditures of the students for each discipline. When in 1968 we began norm-setting for these expenditures the teachers were unable to state precisely how much time the students needed to do specific assignments. Many thought that in general they had nothing to do with the time expenditures of the students. The more assignments they give for a given course, supposedly, the better the students would be prepared. But this does not take into account the real time budget of the students for independent work, beyond which they will not work in any case. It was necessary to organize a questionnaire and direct observations. Now we have normatives. Students' time expenditures have been balanced not only for the semester as a whole, but for the various weeks.

For all the disciplines the time is accordingly "stretched" by colloquiums, quizzes and homework assignments. The rectors approve the plan-schedules for the semester for the various courses of study. For certain teachers it is not always convenient from the standpoint of a given discipline, but whether or not they are optimal depends on the effective mastery of all training disciplines in the semester.

Moreover, beginning with the first course we teach students to draw up weekly individual plans for independent work on the basis of the training schedule and the semester schedule for independent work. Are these plans not drawn up too formulaically? Do the students not simply put prepared normatives in them? One hears such questions frequently. The advantage is that the student has thought about and decided what he will be doing the next week, even if he does not completely fulfill his individual plan. Conscientious students gradually develop the excellent habit of planning their activity. The individual plan, as a rule, reflects fairly precisely the "image" of the student. When the student is lazy it is in pathetic condition. If the form of the plan adopted in the institute is inconvenient for someone, we permit them to adapt it for themselves.

And we also help students by the fact that even during the first semester within the framework of the course entitled "introduction to the specialty" we familiarize them with the organization of mental labor and its psychophysiological foundations. In 1975 the MISis produced two parts of the training aid called "Organization of Mental Labor." In the course they study what the memory and perception are, and how best to organize their work day, be able to work longer, increase their reading speed, and process and



assimilate information more productively. We are speaking about self-control as a means of self-education, planning in work, and methods of research activity. In laboratory studies the students acquire skills in working with texts and outlining, and they learn to draw up individual work plans.

That is, our system is closed: on the one hand, we have tried to plan and coordinate from above what material is best given to the students, in what volume and at what time and, on the other, each student (from below) plans for himself how most effectively to assimilate all this within the course of the semester (and not do "shock work" just before the examination).

#### Active Teaching Methods

The improvement of the quality of training is influenced positively by the utilization in practical and laboratory classes of concrete situations and business games with computers. It is thought that this is the highest form that teaches students to synthesize knowledge from various disciplines in order to solve engineering problems. Business games seem to culminate the work on creating a unified training process for individual specialties that the MISiS has been doing in recent years.

A good deal has already been said about the effectiveness of active methods, but, unfortunately, the matter is being advanced slowly, in particular because it requires large one-time expenditures of teaching labor and a close connection with production in order to develop scenarios and imitation models. Here one cannot do without purposive preparation of teachers of utilization of computers and computerized classrooms. In 1986 our institute completed retraining all of its teachers for work in dialogue with computers.

The MSiS has two computer centers (one large training-scientific center, and another for serving the subsystem ASUvuz). There are only about 300 work places in the institute (terminals and personal computers). Under the 12th Five-Year Plan we plan to have one place in computerized classrooms for every 10 students. The majority of the departments have local computer laboratories. There are no less than 12 terminals in them (computers of the SM type) or personal computers. Experience shows that business games in the specialty are utilized successfully in the training process only if the computer is directly in the department. Groups of developers of the institute's computer center help the departments to create systemwide software and automated training courses with packages of applied programs.

In the profile departments on the basis of imitation models of real sets of equipment and technological processes they are developing training mockups for control of complex metallurgical processes (melting of iron, obtaining steel in converter and electric furnaces, heating and rolling metal). Within the institute students develop devices and acquire skills for controlling technological processes and operationally guiding the work of sets of equipment, sections and shops.

In acquiring engineering skills and abilities, unfortunately, production practice still plays an undeservedly small role. In the plants, as a rule, the students are not allowed to perform engineering functions and they are

entrusted with labor operations (and even these are not in the full volume for the specialty). A paradoxical situation is created in which the interests of the plant manager, the practical workers and the students "coincide" in that they want to have them leave the enterprise as quickly as possible. Instead of developing labor and engineering abilities and skills directly with the equipment, they rely on gathering materials for stereotypical reports about practice.

Recently we have clearly determined the goal and the role of each practical worker in acquiring engineering skills and retaining theoretical knowledge. We try to take away from the program of practice a multitude of issues which cannot be worked on personally because of the abundance of students and are only fleetingly and formally described in reports. Before practice the students must receive a list of questions on their specialty, which they have already learned and should "try out" in production.

But many progressive undertakings in this field remain nothing more than good wishes if they do not actually increase the interest and responsibility of plant managers for the content of the practical work (the development in a particular sequence of labor and engineering functions) and the provision of work places and engineering jobs without detriment to the economic indicators of the enterprises.

The orientation toward the development of abilities and skills requires improvement of the verification of the students' knowledge. Examination sessions evaluate, as a rule, how well the students have memorized the program material and can reproduce it, and not the ability to apply the knowledge they have received, including in unfamiliar situations. In order to change this situation, we at the MISiS have introduced a graduate examination for professional training after the prediploma practice and before the beginning of the diploma work. The rectors are striving to make this exam not be a repetition of those the students have already taken; they want it to test not knowledge of the program, but engineering abilities. It is based on the continuous program of the specialty that was discussed above. In the professional examination there are no traditional questions and engineering problems of varying difficulty are given individually to each student. The examination is written. They can use any technical literature. The engineering problems are drawn up by the graduating departments and the subjects are taken from real production life. We strive to make sure that these problems are not narrow and professional, but require a demonstration of knowledge in fundamental and general engineering disciplines related to making engineering decisions.

The introduction of a professional examination is undoubtedly having an effect on the entire training process. Since there is such an exam the teachers are no longer able to work as "translators" of textbooks, simply filling students with information, but are forced to be concerned about the assimilation of knowledge and its application. The independent work of the students has come into the sphere of their attention. For the examination it was necessary to develop a multitude of realistic engineering problems--this is an immense amount of creative work if, of course, it is not done superficially. Not all teachers or departments were able to do it with equal success. The new

approach first of all verifies the engineering level of the profile department itself and the extent to which its workers are familiar with the real production conditions. The rectors received a justified reproach from the students: "You did not teach us this way, why have you arranged this kind of an examination?" Now the practical studies, business games, and training mockups are directed toward this. Incidentally, we have essentially increased the proportion of practical studies in special training courses (previously it was thought that here lectures and laboratory work were enough). This made it possible for the teachers to work more with the students in solving engineering problems and developing the abilities to make engineering decisions.

The examination for a professional training and its reverse influence on the level and nature of teaching and on the verification of knowledge and combination with the stronger professional orientation when being accepted into the first course--all this, in our opinion, increases the motivation of the students and helps to transform their knowledge into engineering abilities and skills while they are still in the institute. Documents for improving the overall climate in the VUZes as a result of precise observance of the rules of the higher school that have been adopted recently are aimed in this same direction. The VUZ should have no negligent students, and they should be persuaded to study.

The restructuring of the training of engineering personnel has no solid foundation without the development of training and methodological support for the training courses. A change in the nature of the lectures and forms and content of practical and laboratory studies, production practice and independent work of the students is the visible part of the work for restructuring. The training and methodological support for the training courses are its internal, invisible part, without which the restructuring can become bogged down in merely discussions.

In fact, the teacher must be on top of requirements not only concerning qualifications in the area of program material, but he must also know the purpose of the specialist and be able to formulate the goal of the teaching of his course in the overall system of engineering training. He must be able to reveal the interdisciplinary ties between his course and others and understand which of them are the basis for teaching the discipline and which are used in other training courses or practical activity. The teacher must master devices of effective presentation of materials and be able to utilize technical means of training and computers for this. Each laboratory project presupposes special development and supply of equipment and instruments, and practical and seminar classes presuppose the development of subject matter with a selection of production situations. The independent work of the students requires that the teachers prepare individual assignments, correctly determine their volume and distribute them throughout the course of the semester. Nor can one do without the corresponding training literature for all kinds of training processes. This is far from a complete list of the work, in addition to classes, that is found on each line of the training plan. To decree this work from above with the help of instructions, as the USSR MinVUZ did in the recent past without explanatory and organizational work in the VUZes evokes a negative reaction from the teachers. And since, as a rule, not enough time is

allotted for development of training and methodological support, the content part is cut down and what comes to the foreground is formal paperwork which causes justified protest.

In our opinion, administrative forms of management are unacceptable here. Certification with criteria that stimulates the development of the required training and methodological support is more effective here, as it is in general in management of the higher school. If the department has achieved certain criteria (this is confirmed by certification), it is given greater opportunities in the training of specialists, scientific activities, technical supply, and material incentives. Undoubtedly there is also a sharp increase in the requirements for the criteria and procedures of certification. Such certifications are not one-time campaigns that are conducted by commissions consisting basically of functionaries and management staff. It is expedient to conduct them not in opposites, but directly in the departments with the personal participation of the VUZ leaders. In our opinion, this approach will reduce the trivial regulation of the activity of the departments, will enable them to manifest initiative, and will contribute to improving the quality of training of engineers.

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## COST ACCOUNTING AFFECTS WAGE DISTRIBUTION

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 5, May 87 pp 89-102

[Article by B. M. Sukharevskiy, professor, deputy chairman of the Scientific Council under the USSR State Committee for Labor and Social Problems (Moscow): "Wages and Cost Accounting"]

[Text] The restructuring of the organization of wages is based on a new approach to the theory and economics, the policy and the control of wages. It marks their further development in organic unity with the party socioeconomic strategy and the formation of a new economic mechanism. One of the most important directions to the restructuring is the strengthening of the link between wages and cost accounting. The possibility and need for such a link are determined by the essence of wages and cost accounting. But it is now that objective and subjective prerequisites are being created for its expansion and consistent development.

First and foremost, it is important for the improvement of the concrete mechanism for coordinating wages and cost accounting to take place comprehensively, on a scientific basis. It is necessary to consistently generalize advanced experience and new provisions, interpreting them theoretically, to strictly take into account the realities of economics and politics, and to resolutely remove the obstacles that arise on the path to complete and effective utilization of objective economic laws of socialism in the sphere of wages and bring about serious negative phenomena in wages, particularly leveling and violation of the principles of socialist justice.

### The Essence of Wages and Complete Cost Accounting

At first glance wages are a simple category. But the simplicity is deceptive here. Wages reveal the complex spectrum of socioeconomic relations: direct--between the society and the workers; and mediated, through the enterprise--between the workers and the enterprise and among the labor collectives. They also reflect the diverse needs and interests of the subjects of these relations. The problem is to realize the entire system of relations, needs and interests embodied in wages in a new mechanism for management of wages, having provided for their smooth and effective functioning.

For a long time the theory simplified the essence of wages, considering it in a one-sided way--as direct relations between the society and the worker. This corresponded to the practice where the absolute wage fund was planned centrally for the enterprises and the state meticulously doled it out without the proper accounting for how effectively the enterprises and labor collectives were utilizing their internal resources. Social guarantees of the payment of a certain sum to the workers for their labor were completely the responsibility of the state.

Yet the objective economic basis for the interconnection under consideration in socialism consists in that, being in the final analysis a proportion of the nationwide consumption fund, wages at the same time acts directly as a proportion in the cost of products created and sold by the enterprise. This duality reflects, on the one hand, the existence of nationwide ownership of the means of production, and, on the other, the exercise of this ownership under conditions of commodity and monetary relations and relative independence of the enterprises. And the entire essence lies in the relationship and combination of these two aspects of wages. Although until recently wages were formerly paid from the cost of the products sold by the enterprise, in reality the link between them was insignificant and the workers did not actually experience it very much.

The new approach to wages proposed at the 27th CPSU Congress requires that the amounts of wages be directly coordinated to the incomes from product sales. Social guarantees of payment of wages to workers for their labor must now be provided by the enterprises along with the state from the incomes from their cost-accounting activity. In essence we are talking about extending the principles of self-financing to wages, taking into account their content and functions. Herein lies the key to increasing the interest and responsibility of enterprises and labor collectives to the society and each worker.

It should be noted that we are speaking not only about what the enterprise has produced, that is, not only about the relations in production itself that are determined beforehand in the plan, but also about the subsequent conditions and the results of product sales--in terms of value and physical units. In theory ignoring relations in sales and the process of exchange when characterizing the essence of wages showed that the role of law of value in the additional social evaluation through the exchange of the necessary amount of working time and its payment, and also the determination of the sphere and effectiveness of the application of specific labor to production of one product or another in physical terms had decreased. Practically at the same time we lost sight of the powerful economic lever of the influence of the client (consumer) on production, which could contribute to achieving a correspondence between the social needs and the consumer demand.

Today the role of product sales, taking into account delivery in physical units under contracts incentives for fulfillment and the application of strict sanctions against enterprises and the wages of workers when they fail to meet agreements is increasing, which is one of the real results of strengthening the link between wages and complete cost accounting. This practice will still have to be strengthened and deepened in all ways, extending it to the system of relations within the enterprise and coordinating the production

rhythm and the fulfillment of contracts between distances and internal and external cost-accounting relations.

Desiring to take fuller advantage of the law of value and wages and cost accounting, it is necessary as quickly as possible to completely eliminate the practice of equating the plan to actual individual expenditures of labor and the level of their effectiveness and payment that has been reached as well as adjusting the plan to the actual fulfillment. This policy of planning stands in contradiction to the law of value, whose progressive basis consists not in mechanical coverage of any labor expenditures at the expense of the society, but stimulating their all-around reduction as compared to the socially necessary level. Improvement of the mechanism for the utilization of the law of value under the conditions of healthy functioning of commodity-monetary relations on a socialist basis is an important factor in forming the anti-expenditure mechanism and more consistently realizing the principle of distribution according to labor.

Strengthening the link between wages and cost accounting is largely determined by the development of collective forms of labor--the new type of brigade and the collective contract in large organizational structures (for example, following the experience of Trust No 18, Mosobltselstroy). With a predominance of individual organization of labor and individual piece-rate work, the overall results of the operation of the enterprise did not have any essential influence on the earnings of the workers. Collective interest acquires a stable basis when the process of labor itself is organized in such a way that its final product depends to a decisive degree on collective, joint, smooth efforts. In turn, collective interest in the final product of the enterprise is an important binding link between personal interests and the interests of the entire society. With formal cost accounting the priority of state interests was achieved largely in a one-sided way. A deep connection between wages and complete cost-accounting makes it possible to provide this priority with a harmonious combination of all interests.

One of the important conditions for solving the problem that has been set is a simultaneous strengthening of economic methods of centralized control of wages. In addition to an overall improvement of economic levers (prices, finances, credit), the introduction of long-term normatives for the formation of the wage funds of the enterprises, quality of changes in the social evaluation of the results of economic activity, and the restructuring of the wage rate system on a new economic basis become especially important with respect to wages. A large amount of practical experience is being accumulated here and its extensive discussion is continuing.

#### The Formation of the Wage Fund of the Cost-Accounting Enterprise

In terms of the mechanism for forming the wage fund, two issues are discussed most actively.

The first issue: Should we retain the two-channel system of forming a wage fund--basic and material incentives, which are distinguished in terms of their sources, criteria, forms and purpose, or would it be expedient to have a unified wage fund that is formed according to unified normatives? On the

surface the answer is obviously in favor of the latter: someone who has received earnings does not put it in two pockets: this is from the wage fund and this is from the material incentive fund. And the stores have one cash register and do not divide them up into money received from one fund or the other. But when one looks deeper the first answer seems more correct.

With commodity-monetary relations and relative isolation of enterprises, social expenditures of production are divided up into that part that is included in the production cost of the product of the enterprise and that which is a form of net income of the society. In turn, wages are divided up: the part that reflects the social evaluation of the live labor that goes into the production cost of the production and the part paid from net income (profit) of the enterprise depending on the cost-accounting indicator of its activity. The two-channel system is expedient also because within the enterprise the savings on labor creates an internal source of material incentive in the form of savings on wages. Savings on material expenditures and improvement of product quality directly at the enterprise--the producer--do not create such a saving from the wage fund and profit can be the only source of incentive. This material incentive can also apply to the production costs, but then it is necessary to increase the wage fund of the enterprise, having revised the normative for its formation, for otherwise the enterprise will end up in a difficult financial situation.

The second issue: on what basis or on what cost-accounting indicators of the operation of the enterprise should one construct the normatives for the formation of the wage fund themselves? In practice many indicators are used--particular and general. It seems that what corresponds most to complete cost accounting and the anti-expenditure mechanism is the form of basic wages according to normatives from the gross income (net output), and the material incentive funds--according to the normative from profit. The most consistent would be to apply the gross income minus payments for resources and net profit, that is, the balance profit minus payments into the budget. Such a "purification" makes it possible to replace the indicator of profitability to a certain degree.

Of course it is necessary to improve the system of wholesale prices so that the payments will be substantiated. There is now, for example, a need to increase payments into the social security fund as a form of "payment for labor resources."

It is necessary to provide for direct interest on the part of workers in increasing the added product and profit. With completed cost accounting the interest in profit increases at the enterprises as an economic unit: with self-financing of the enterprise, significant capital investments are made from it and funds for the development of production, social-cultural measures and housing construction are formed. The interconnection between profit and wages is a means of bringing various interests together.

It is interesting to remind the reader that in the 1930's a decision was made whereby the profit could not be used to increase the wages of the workers. The so-called FUBR--Fund for Improvement of the Life of Workers--could be used, as one can see from the very name, not for additional material



incentives but only as a source of solving social problems. It was not until the end of the decade that it could be allotted from the director's fund--as a rule, not more than 5 percent of the wage fund--in the form of funds for material incentives.

Regardless of what indicator may be used in the social evaluation of labor, there still remains the question of its criteria from the standpoint of the dynamics (rates), the level and the plan. For a long time there was only one criterion--the degree of fulfillment and overfulfillment of the plan. Its shortcomings are well-known. The current course is toward a sharp increase in the rates, mainly in terms of qualitative indicators. But there is no justification for separating incentives from the plan. Then how would one stimulate higher rates that are included in the plan itself? Here is a possible solution: the growth rates are encouraged to the greatest degree if they are within the framework envisioned by the plan, and if they are in excess of this--to a lesser degree.

The level from which one must proceed is of fundamental significance. At the Sumy Machine-Building Plant imeni M. V. Frunze, for example, they take into account primarily the degree of utilization of production capacities. Another aspect is the level the enterprise reaches as a result of improvement of its activity. We need a qualitatively new level--above labor productivity, product quality, and scientific and technical progress. In order to stimulate progress toward it, we need statewide long-term normatives and standards that appreciably support those that are trying to rise above average.

A special issue is the question of replacing the normative methods of forming the wage fund with the residual method. Here there is reason for doubt. If wages are an objectively conditioned share of the nationwide consumption fund and the growth income of the enterprise, then why should they be previously established as a normative proportion with respect to any changes in the growth income of the enterprise itself and be only a residual after subtracting from the gross income other parts of it according to the normatives? Moreover, the 27th CPSU Congress set it was incorrect to form funds for social needs as a residual after satisfying production needs. And yet here is a complete parallel with wages as the residual from the rough income. It would be precipitous to think of cost accounting in terms of its most important element--wages without statewide normatives.

Let us say that the wage fund has been formed. Here arises a problem that has long tormented everyone: what happens if individual workers and brigades have fulfilled their norms in terms of quantity and quality but the earnings of the enterprise, because of its unsatisfactory work as a whole, does not even provide for their wage rate, the earnings of the preceding year, or the basic part of them when they were working better? Who is the guarantor here? In essence, complete cost accounting means the establishment of a strict measure of responsibility of each worker of the enterprise in the event of failure to achieve the established amounts of gross income. And the source of compensation to the aforementioned workers and brigades for a certain portion of their earnings in such cases could be the creation within normative limits of an overall wage fund of a special reserve fund, and also utilization of part of the centralized material incentive fund and the reserve fund of the

ministries. Moreover, of course, it is necessary to increase the material responsibility of the associated workers.

Normative formation of part of the wage fund in the form of the material incentive fund is utilized in practice also for better coordination of the mass of monetary earnings and the mass of commodities and paid services. True, today not every enterprise, by increasing earnings can increase the commodity mass for consumption by the same amount. There are unutilized possibilities here, however. There is a system of additional deductions into the material incentive fund depending on the volume of objects of consumption produced per ruble of wages paid by the enterprise. In reality, the enterprises are still far from the established normatives.

#### New Evaluations of the Measure of Labor and Payment for It

Indicators of the social evaluation of labor at various levels of management and in various collectives, branches, professions and specialties of workers cannot be identical, but they must have a common basis. An evaluation that is adequate to modern conditions and requirements can be obtained, it would seem, if in one form or another it characterized, first, the satisfaction of public needs (of the associated workers, collectives, consumers and so forth); in the second place, the effectiveness of the utilization of existing reserves; and in the third place, it would combine the evaluation of the individual and at the same time the collective labor contribution (at various levels of the collective).

One hears from certain economists the strange suggestion of separating the labor norm from the wages and severing the measure of labor from the measure of payment. Such a proposal originated because with wage rates and salaries that had not been changed for a long time the increase in output norms was accompanied by a reduction of the rates. Workers were interested in low norms, and hence also low labor productivity. It is necessary to strengthen this link: the higher the norm, the higher the wages, and the lower the norm, the lower the wages. But here one cannot do without changing the mechanism for the functioning of the wage rate system, to which we shall turn later.

There is one more unattractive side to the existing organization of payment: the disparity between the norm and the plan. The degree of fulfillment of the plan sharply diverts us from the level of fulfillment of the output norms. For example, in machine building it has become an unwritten rule that in order to fill the plan the output norms must be overfulfilled by 20 percent and more. The decree adopted recently by the USSR Council of Ministers and the AUCCTU concerning improvement of norm setting for labor is coordinated with a planned reduction of the labor-intensiveness of products. Labor indicators and working time should be more closely linked to normatives for the formation of the wage fund of the enterprise in value terms--with respect to the enterprise's growth income. The establishment of this fund separately from the labor-intensiveness does not provide for consistent realization of the principle of distribution according to labor. Here one can see the positive experience of VAZ which deserves to be disseminated everywhere. In this sense, as was noted, again it is important to strengthen the primary incentives for those who fulfill the most progressive assignments that are far

ahead of the average. The farther ahead of the average they are, the greater the additional differentiated income, which makes it possible to provide more appreciable incentive for the advanced workers.

Norm-setting pertains to expenditures not only of live labor, but also of embodied labor. The evaluation of the savings on material expenditures and the quality of products and work is becoming more important. The Saratov, Lvov and Dnepropetrovsk experiments have not yet become widespread. The savings, the quality, and the consumer properties of the products must be introduced into the norm-setting for the ratio between the dynamics of labor productivity and wages. Today they are pushed to the side: economy and quality are not taken into account in labor productivity, and incentives for them are not included in the wages within the framework of this normative. Apparently here too there should be a changeover to the actual net output (gross income).

During the course of the preCongress discussion a good deal was said about replacing the distribution according to the quantity and quality of labor with an evaluation according to the results of product sales. The intention seemed good: to increase the role of final results in the social evaluation of labor. The new edition of the party Program made a fundamental statement: it is necessary to consistently distribute according to the quantity and quality of labor and to take into account the conditions and results of labor.

There was this extreme: an enterprise had not fulfilled the plan for production cost--not one of the managers of subdivisions received a bonus, although they had successfully met their own indicators. The other extreme would be to encourage subdivisions, regardless of the activity of the enterprise as a whole. This would stand in direct contradiction to the principles of complete cost accounting.

The problem is to determine the varying contributions of individual subdivisions to the overall results of enterprise activities. For example, designers make one contribution and suppliers another. It would be expedient therefore, on the basis of the requirements of complete cost accounting, to form the wage fund and the incentive fund according to normatives not only on the scale of the enterprise as a whole, but also its individual subdivisions. Incentives should be given to workers in a certain proportion, which varies depending on the priority of the interests of the strategy or the current moment, the level of the whole and its parts. Practice gives us an instrument--the KTU [coefficient of labor participation]. (Incidentally, the application of the coefficient of labor participation was envisioned in one of the decrees signed by V. I. Lenin.) With the extension of the contract to the level of the enterprises the KTU will apparently rise just as high. But one must not forget how many stumbling stones there are on the way to its application. The KTU is also a powerful instrument for disclosing the possibilities of the application of capabilities in labor and to labor.

The social evaluation of labor can be revealed easily from the differentiation of wages that is achieved and allowed. The nature of differentiation is determined by three indicators: the level of the minimum wage, the differences throughout the entire wage scale, especially between the lower and upper levels, and proportions in the distribution of workers and employees

according to the amounts of their wages. During the past quarter-century, reliance has been placed on the first of these: the minimum was quadrupled and the wage rates and salaries of medium-paid workers (no more than 200 rubles) also increased. The rates for the "highly paid" did not increase and their earnings sometimes decreased.

This orientation was understandable at the time. But it is also clear why, for example, the desired scientific and technical progress was not achieved: the earnings of the bearers of progress did not stimulate additional efforts. On the whole, the economic function of wages became weaker. The earmarked programs for mechanization of manual, less skilled, less productive labor were not fulfilled and the people employed in this took away a considerable part of the wage fund. The leveling increased.

The decisions of the 27th CPSU Congress envisioned further increasing the minimum wage. But now this will take place against the background of increased differentiation of wages according to the difficulty of labor and above all according to the labor achievements of the worker and the collective. The main thing is to place the majority of workers in conditions of highly productive, skilled, significant labor. In 15 years the sections with manual, unskilled labor which employ 20 million workers will decrease. Microcompressors, robots, flexible automated productions--these mean different earnings and a closer interweaving of economic and social tasks and the functions of wages. Complete cost accounting will make it possible to create material conditions which the enterprises will provide for themselves.

#### From a Static Model of Wages to a Dynamic One

In the mode of management that took form in the past there was a natural establishment of an inflexible, static model of wage control. Correspondingly a dynamic model is required for the new conditions. The basis of the static model was the wage rate system. The wage rate system had a limited sphere of action, mechanism of functioning, and specific sources and procedures for changing from one level of wage rate to another. These shortcomings of the existing practice, however, did not give some economists justification during the course of the pregress discussions to call for "completely eliminating" the wage rate system as soon as possible. It had functions that could not be performed by other elements of wages: an instrument for regulation by the state of proportions in the wages of workers of individual categories, branches and regions; a form of establishment of the minimum wage; a means of establishing unity and payment for labor with equal difficulty and translating (reducing) complex labor to simple labor; a base for setting rates for work, including complex work in brigades, sections, shops under contract, and so on.

Centralized establishment of the system of wage rates is a sphere of direct relations between the state and workers and employees regarding their labor and payment for it. Hence the wage rate system should not be abolished but improved, so that it will meet the requirements of flexibility and dynamism. The point of departure is the principally new policy that has been adopted for revising and introducing new, higher rates and salaries into production branches--with funds earned by the labor collectives themselves within the limits of the wage fund, formed according to established stable normatives.

With this approach the introduction of new wage rates has become an important stimulus to acceleration of scientific and technical progress and the utilization of organizational-economic factors for increasing labor productivity. Thus the dynamics of all elements of wages are linked to the cost accounting results of the activity of the enterprise. The enterprises have greater rights, the labor collectives have greater authority, and the trade unions have a larger role in making decisions not only with respect to the additional part of the earnings, but also the basic part, and there is more mass control from below over the measure of labor and the measure of payment to each.

Up to this point the wage rate system has functioned mainly in one direction: wages were increased. Thus the time rate workers working on normed assignments who receive the wage rate of piece rate workers, as distinct from the latter, were paid their full rate when the assignments were not fulfilled, and when they were fulfilled they received bonuses. The salaries of managers remain basically unchanged. It was justified to give the ministries and managers of enterprises the right to reduce the salary of their subordinates to within the limits of the minimum and maximum for poor work. Following the example of the leaders of science--after certification or by some other method. The amount of earnings then is more closely coordinated with the final results of labor.

Up until recently the basic function of the wage rate system was to rank the level of payments according to the difficulty of the labor. But the introduction of various increments to wage rates and salaries and also skill groups for individual categories of specialists overcomes this limitation and strengthens the link between the wage rates and the results of labor. The tendency is undoubtedly progressive and it should be further developed.

The flexibility of the wage rate system can also be evaluated according to the proportion of the wage rate in the earnings as a whole. Recently it has been suggested to make the wage rate just as mobile as the other elements of the structure of wages: let it always be equal to 80 percent, and the above-rate part--20 percent. In my opinion, it would be more difficult to control wages under this decision, and the freezing of the above-rate part would stand in contradiction to the task of strengthening the tie between wages, on the one hand, and cost accounting and collective results of labor, on the other.

The improvement of the economic mechanism in 1979 and 1985 did not affect the foundations of the existing wage system. This is one of the reasons why it did not "reach" the work places, each worker. Having carefully adjusted the mechanism for the functioning of wages, it is now necessary to reach a point where it is fully and organically included in the new integrated system of management of the socialist nation economy.

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## WAGE PAYMENT TO SPECIALISTS DISCUSSED

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[Article by B. Ye. Labkovskiy, candidate of economic sciences (Moscow): "The 'Horizontal' of the Payment of a Specialist"]

[Text] One of the issues that attracts unwavering attention to itself in connection with the need to increase the role of specialists in the national economy is the payment for their labor. Here special hopes are placed in improvement of wages along the "horizontal," that is, at one and the same job level. How can one increase his salary depending on the level of qualifications and the difficulty of the work that is performed?

Practical suggestions made a quarter of a century ago amounted to establishing for engineers and technicians several skill groups, categories, and classes. (Footnote 1) Similar considerations were later to be expressed repeatedly, but until recently the skill categories were stipulated only for two positions in machine building, metal processing and several other branches: engineer-designer and engineer-technologist.

Because of the increase in salaries in the coal and shale industry and mining construction beginning in 1982, categories were introduced for wages for the majority of positions of engineers, economists and technicians. Then categories were also established for workers of sovkhozes and other state agricultural enterprises (Footnote 2): agronomists, zootechnicians, dispatchers, engineers, economists, veterinarians, agricultural and forest reclamation workers and legal consultants.

As is frequently the case, something you have been waiting for for a long time appears unexpectedly and catches you unawares. This is what happened with the categories. This is shown by an analysis of two components: the "Basic Requirements for Inclusion in Skill Categories for Wages of Engineers, Economists and Technicians Employed in the Coal (Shale) Industry and Mining Construction" and the "Provisions for Including in Skill Categories for Wages of Specialists of Sovkhozes and Other State Agricultural Enterprises," and also an analysis of the practical experience of more than 400 enterprises of the coal industry.

In order for the establishment of qualifications categories for wages to actually solve the problems facing us it is necessary, in our opinion, to answer more precisely certain methodological, tactical and organizational questions and to order them. This is even more important since this approach will obviously be extended to other branches as well.

First of all about the essence and criteria for establishing qualifications categories. The qualifications of a worker within one profession or position or another depend on the knowledge and ability acquired during the process of special training, on innate and developed capabilities, and on professional work experience. The dual nature of the qualifications is reflected in the fact that within the profession (position) the worker can perform either more skilled (complex) kinds of work or a large volume of work with lower skills. The provision of the correspondence between the skill level of the work and the worker is the task of the labor organizer.

Not only common sense and experience in life, but also the objective law of payment according to the quantity and quality of labor require more complete accounting for the differences in qualifications. With respect to the workers this process is clear in both theory and practice. But as it pertains to specialists, judging from the aforementioned documents (the "Basic Requirements" and "Provisions"), there is no methodological clarity or definiteness in the criteria themselves. Along with the traditional criteria--complexity of the work that is performed, the level of training and the worker tenure, it is suggested to take into account the work experience as determined by the "labor contribution to production." Moreover, the main indicator when evaluating the complexity of the work is called the "effectiveness of work (labor) performed, determined according to the final result." Thus the question of establishing skill categories for a specialist for the performance of work of a certain degree of difficulty is replaced by the issue concerning wages for a specific job, for the achieved and also the "final" result. This is tantamount to deciding to award a class rating to civil aviation pilots according to the results of their landing of an airliner with passengers on board.

The labor contribution to production in the aforementioned documents is revealed as a characterization of various aspects of the activity of the enterprise: the utilization of existing capacities for accelerating scientific and technical progress, scientific organization of labor and its increased productivity, savings on material and labor resources, the reduction of the labor intensiveness and production cost of products, improvement of their quality, reduction of manual labor and improvement of working conditions, and extensive dissemination of advanced experience. With this approach it is difficult to provide a method for accounting for the labor contribution in order to determine the qualifications category of a specific specialist. This is obviously why it is not used.

In practice the labor contribution and labor participation are evaluated, as a rule, according to the basic earnings. As a result one ends up with a vicious circle: the criterion for the qualifications category for establishing the salary is...the salary itself. The situation is no better with the "main indicator" for evaluating complexity. There are no methods for determining

and accounting for it either, nor can there be, since the complexity of work should be evaluated up to the final result, and these are categories on different planes.

The individual results of the activity of specialists and their concrete personal contribution to the overall final results of the work of the collective of the enterprise have their own forms of the material and moral incentives: bonuses, one-time remunerations, payment according to the results of the work for the year or longer period, departmental and governmental awards and so forth. But at the basis of the principle of differentiation of wages depending on the qualifications there is always the question of payment for forthcoming and not past labor, whether it be the wage rate category (rate) of the worker or the qualifications category (salary) of the employee. "When evaluating the complexity of a particular kind of work of employees," it says in the methods of the Scientific Research Institute of Labor, "we assume that it is performed by an abstract worker with the necessary qualifications." (Footnote 4)

An underestimation of the worker's qualifications as an independent factor led to a situation where the special increment to salaries for high qualifications interpreted as an incentive for the personal labor contribution in the past, which is paid, true, in the future, but the main qualification markers are the level of education and the length of service and they are not to be considered as indicators (but only conditions) for its establishment. (Footnote 5)

The methodological provisions concerning evaluating the degree of complexity of the work that is performed are not distinguished by their clarity or concreteness either. Two examples will suffice. "The especially complicated job are those complex jobs which meet to a maximum degree the criteria for being included in qualifications categories...." "Jobs with increased complexity include various jobs that meet the criteria for being included in qualifications categories." (Footnote 6)

All this has caused serious difficulties in practice. The majority of managers of production associations and enterprises point out that when establishing qualifications categories for specialists the complexity of the work they perform was taken into account, but if evaluation was done empirically, on the basis of practical experience and intuition, subjectively. They note that the methods of evaluating complexity recommended in the "Basic Requirements" are too general and ramified and cannot serve as criteria when including specialists in qualifications categories, not to mention the precision of accounting.

The criteria for the complexity of work that is performed cause objections even in the form in which they are formulated. Thus the research of the Scientific Research Institute of Labor whose co-workers were the branch scientific research organizations, announced: for engineers, economists and other specialists of this level it is not typical to have especially complicated or complex work, which is also reflected in the scientific and methodological recommendations.



In this connection there seems to be justification for the proposals concerning the need to develop methods that make it possible to determine the degree of complexity of work for various kinds of activity at various levels of management and for various positions. On the practical plane, qualification characteristics are needed for the categories.

The qualifications descriptions of specialists approved in 1982, with the exception of four positions of engineers (designers, technologists, norm-setting engineers and engineers for the organization of labor), there are none of these. For these categories they give only the qualifications requirements placed on the worker, but the sections "official duties" and "must know" are not differentiated. This contradicts the well-known point that "neither education nor length of service of the worker are criteria that characterize the complexity of the labor but, on the contrary, the work predetermines the volume of theoretical knowledge and practical experience required for its performance." (Footnote 8) The characteristics mentioned above determine the qualifications requirements for education and length of service, but they do not give the official duties for each category from which they ensue.

The reason apparently lies in the fact that the methodological fundamentals for determining the complexity of labor of employees are based on descriptions that are contained in the reference book of positions of employees which was developed a relatively long time ago (in 1966-1969) as an interbranch reference and without orientation toward intrapositional qualifications categories.

It is necessary to develop more concrete characteristics of positions of employees in the various branches taking into account the possibilities of further intrapositional division according to categories. On the basis of these it would be possible to take the next step in the methods for evaluating the complexity of the labor of employees. But for the time being it would be expedient to give as methodological recommendations at least in the most general form the distribution of functions and kinds of work performed by specialists and the degree of their complexity.

The "Basic Requirements" for inclusion in categories I and II of engineers and economists employed in the coal industry stipulate only a higher education and a length of service in keeping with the positions of 6 years and 3 years. Only for engineers and economists without categories (Category III) is it allowed "in a number of cases" (?) to have only a secondary specialized education with a length of service of no less than 5 years.

This approach seems unrealistic since it ignores the actual situation whereby in the coal industry, as in other branches of industry, a considerable proportion of the workers holding positions as engineers and especially economists do not have a higher education. This is not required in the existing interbranch KSDS. In it, for filling 49 positions of engineers, including designers and technologists of Category I, the qualifications requirements allow a secondary specialized education. And indeed, in the production associations and enterprises that were investigated 49.9 percent of the engineers and 73.3 percent of the economists do not have a higher education. Naturally, it is impossible to change the situation in reality by

a one-time increase in requirements, regardless of what good intentions may motivate this. To do this it is necessary to have a well-thought out system of measures over a number of years.

The requirements for length of service have also increased sharply. For engineers and economists of Category I, 6 years of service are required, for the majority of positions of engineers that have changed over to the KSDS, when they have a higher education there are no requirements for length of service, and when they have a secondary specialized education the length of service of 3 years is needed. Even for head specialists, including the head engineer, the head designer, the head mechanic, and the head mining surveyor, when they have a higher education the required length of service is 5 years.

Incidentally, regardless of how "tough" the requirements that have been introduced may seem to be, in reality they do not have a very strong effect on the qualifications structure of personnel. For beginning with the first descriptions in 1969, there is a note that makes it possible to get around them in practice. It points out that "people without special training or length of service established by qualifications requirements but who have sufficient practical experience in work and are performing a full volume of job duties placed upon them can be left in the position they occupy or allowed to be appointed to it in the given enterprise (organization) (Footnote 9).

In light of what has been said, one cannot be surprised by the results of the qualifications categorization in the coal industry. Among engineers and economists of Category I, 33 and 53.5 percent of the specialists, respectively, do not have a higher education. Among specialists in Category II these indicators are even higher--43 and 64 percent, respectively. The picture is similar with respect to the length of service: 43.7 percent of the engineers and 53 percent of the economists of Category I with a higher education do not have 6 years of service. Even 28.1 percent of the engineers, and 44.0 percent of the economists with a secondary specialized education do not have this length of service.

An analysis of the table of official salaries in the coal industry shows that the difference between the salaries of specialists in the extreme qualifications categories amounts to only 10.5-12 percent, and in the contiguous ones--5-5.5 percent. This is hardly adequate to the differences in the criteria: the doubling of the length of service, the differences between especially complicated work and work of average complexity, and higher and secondary specialized education.

Many specialists regard this stimulus as purely symbolic. Taking into account the bonuses, increments and other payments, the differences in wages of specialists of various categories are frequently erased. Thus in 1982 the average monthly earnings in the mines and pits for engineers of Categories I and II in the Karagandaugol Association were the same; for economists without categories they were higher than for economists of Category II in the Vorkutaugol and Intaugol Association; for economists of Category II they were higher than for economists of Category I in the Gukovugol and Yuzhkuzbassugol associations. A similar situation could be found in other associations.

The qualifications categories for engineer-designers and technologists that was introduced at one time suggested a significantly greater differentiation of salaries. The difference between the maximum salary of Category I and the minimum salary of Category III (the "forks" remained) was for engineer-designers among the groups of enterprises 20.7 and 22.2 percent, and for engineer-technologists--43.5 and 46.7 percent, and in the coal industry itself the "forks" of the salaries of specialists, which were to a large degree intended for taking into account the differences in qualifications, had a large amplitude: in the salaries of 1958 for engineers of all kinds--21.7 percent; in the salaries of 1972 for engineers--16.7-17.8 percent; and for economists--30.4 percent. In this connection there seems to be justification for the suggestion of coal industry workers to increase the difference between the salaries of specialists of contiguous qualifications categories to 15-20 percent. (Footnote 10)

The proportion of senior specialists among engineers and economists in the branches of industry is extremely great. By the time of the introduction of the new conditions for wages into the coal industry, it exceeded 50 percent in production associations and enterprises.

In the salary schedules that were previously in effect for senior specialists, there was a "fork" in the range of 11.8-17.8 percent and it exceeded the salaries of rank-and-file engineers by 5-10 percent, which made it possible to differentiate the salaries depending on the qualifications. Now they, like the other specialists, have a fixed salary, but the senior specialists are not included in the overall system of qualifications categorization. If one takes into account that the salaries of senior specialists are higher than those of specialists of Category I, and the new qualifications requirements have not been set, one ends up with a paradoxical situation. The worker who does not meet the qualifications requirements for filling the position of a specialist of the lowest category can hold the position of a senior engineer with a salary that exceeds the salary of the latter by 21 percent (40 rubles). And it is no accident that in the enterprises that were investigated, half (49.8 percent) of the senior specialists do not have a higher education, including 44.9 percent of the senior engineers and 73.3 percent of the senior economists. Senior specialists were not included in the system of qualifications categorization in machine building and metal processing. True, there in terms of the salary level they are on the other side: their average salary is at the level of the engineer-designer of Category III.

This indefinite position of senior specialists in the system of differentiation of wages is linked to the fact that when the KSDS was developed, they were paid from the system of division of labor according to qualifications. The qualifications characteristics in them were developed not on the basis that the "senior" "along with the performance of duties inherent in the given position, provides leadership of workers under his jurisdiction or is the responsible official for functions or conducts an independent part of the work." For all three of them fall under factors of work complexity that lie at the basis of the qualifications-position division of labor of employees. Moreover, the work performed by senior specialists is more complicated in terms of other indicators as well.

Obviously, the qualifications characteristics for senior specialists were necessary also for interpositional categorizing. They are even more necessary when making divisions within the position. In any case, the qualifications requirements for senior specialists should be no less than those established for specialists of Category I.

For further improvement of payment according to categories it would be expedient to study the question of eliminating the dual approach to determining the amounts of salaries of specialists. At the present time, the complexity of the labor of specialists, on the one hand, is expressed through the categories and, on the other, it is expressed directly. Thus in machine building and metal processing, along with the three categories, the salaries of engineering designers and technologists are differentiated on the complexity of the products manufactured at the enterprises; in the coal industry--according to two groups of specialists of engineers. But, after all, here too the differences can be taken into account through the complexity of the work. This means that they should be reflected in a unified system of qualifications division, possibly through increasing the number of categories.

Special attention should be given to the question of the range of the qualifications categories. It seems to us that the matter should not be decided on the basis of the patterns in the development of the qualifications of a specialist. We have not seen any research on this subject but, judging from the literature, it has been established and recognized abroad that the qualifications of the specialist under normal conditions over the period of his active labor activity of 25-30 years increase continually, rising by a factor of 2-3 as compared to the initial level. The system of payment is oriented toward this. In the United States, for example, the payment of an engineer with 10 years of service increases by a factor of 1.5 and 20 years--by a factor of 2, and the maximum possible factor of increase is 3. The rate schedule has been constructed in the same way for engineers in France and Japan. In England the difference in the salaries of engineers depending on their experience and qualifications reaches a factor of 7. (Footnote 11)

At the basis of the existing division of categories lies the idea that the qualifications of a specialist can increase by no more than 20-30 percent, and only in the first 6 years of its work. This approach does not seem convincing. Of course we are not speaking about an artificial increase in incentives for length of service as such. It should be based on improvement of the entire system of training, distribution and utilization of specialists which would indeed provide for a continuous rise of their qualifications level.

The basis for the qualifications of a specialist is laid in the VUZ. The initial evaluation should also be provided here. The diploma for completion of a higher educational institution should not be impersonal with respect to its owner's qualifications. To meet this requirement there are certain organizational prerequisites. Now, by an instruction of the USSR MinVUZ, qualifications characteristics are being developed for specialists with higher education. They set the requirements: what the specialist should be, what he should be able to do, what he should know. (Footnote 12) There are no special difficulties in comparing the graduate's actual achievements with these.

The initial evaluation of the specialist inevitably reflects the differences in the forms of training. If, as research has shown, the time spent on training by the students in day, evening and correspondence study have a ratio of 5:2, 5:1 (Footnote 13), then apparently the levels of training (qualifications) also differ. Nor can one ignore the differences in the levels of various VUZes, including universities.

Of no small significance for the national economy, production, and a specialist himself is his utilization precisely according to the profile of his training (specialty). A lack of correspondence between the profile of training and the position should be a basis for establishing a lower qualifications category for wages (Footnote 14). This measure would also affect the improvement of planning the training of specialists and distribution.

To this end, in the qualifications characteristics for the positions of employees it is necessary to indicate, along with the level, also the profile of the education (name and number of specialty). And these requirements for being included in the highest qualifications category should even now be made unconditional and uncompromising. With time it will be possible to take this approach to the subsequent categories as well.

There should be a more specific and concrete evaluation of the results of various organizational forms of increasing qualifications in the national economy. It is generally known that without periodically increasing qualifications it is not only impossible to have growth, but it is even impossible to maintain the initial level. The criteria for being included in the highest categories for wages and the corresponding qualifications characteristics should contain requirements for increasing qualifications, possibly with an indication of the period, forms and duration of it.

The level of qualifications can be not only raised but also lowered. Therefore in the provisions concerning qualifications categories we should determine the conditions, criteria and policy for lowering categories.

The qualifications categorization in combination with the qualifications descriptions for the various categories and schedules of salaries can and should become an active and the most important means of occupational orientation work. The branch wage rate-qualifications references of positions of specialists constructed on the basis of these would give an idea of the content of the position and the preparation for it as well as the prospects for growth and material incentives.

#### FOOTNOTES

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14. V. Guzev in the article "Increasing the Stimulating Role of Wages in Engineering and Technical Personnel" (SOTSIALISTICHESKIY TRUD, No 3, 1984, p 96) gives this sequence for reducing the salaries for specialists depending on the profile of education: (1) higher education in the specialty, (2) secondary technical education in the specialty, (3) higher education in a different profile, (4) secondary technical education in a different profile.

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## TELEVISION INFLUENCES DAILY LIFE

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[Article by Tatyana Boldyreva: "On Both Sides of the Television Screen"; first four paragraphs EKO introduction]

[Text] Each day millions of people spend a good deal of time with such a "family member" as the color television set. And this time is pleasant when the television is not capricious and performs its duties correctly.

Today's television viewers do not remember and do not know about sets with black-and-white screens the size of a calendar page. The screen has grown larger and the number of problems experienced by the television owners has increased. Today the mass of problems has reached critical proportions. So many of them have accumulated that it is obvious to everyone: it is necessary to take decisive measures.

So far the most decisive are the consumers of the television sets--they stand in line for a long time and are very cautious about buying this commodity. In trade, at television plants and in repair shops the "period of accumulation" continues--both of manufactured television sets and decisions--where to go next?... Recently the question of the reliability of color television sets has been repeatedly considered. In particular, this problem was discussed at the June (1983) Plenum of the CPSU Central Committee and the meeting of the Politburo of the CPSU Central Committee in September 1983; the poor quality of the Kaskad television sets was noted by Comrade M. S. Gorbachev in Tolyatti in April of 1986. And although a good deal of time has passed, there have been no essential changes for the better.

In the selection of materials offered here an attempt has been made to evaluate the most crucial problems from the standpoint of protecting the interests of the owners and potential buyers of television sets. Incidentally, these same problems are being experienced to one degree or another by other branches that produce complex household equipment.

There is only one difference between the purchase of a lottery ticket and a television set--the price. And with a television set, especially a colored one, one can "lose" on the first day: you turn it on at home and it does

nothing, it just occupies a space in your apartment. But let us say that you have gotten comfortable and you are looking at all the programs in a row. How long will you be able to look at them?

Television sets are made by enterprises of the USSR Ministry of the Communications Equipment Industry (72 percent of the overall output), Ministry of the Radio Industry (18 percent), Ministry of the Electronics Industry (4 percent) and other solid departments. They look out for the interests of the consumers, but not very zealously. In 1985, according to data of the USSR Central Statistical Administration, every third television set broke down in the first year after it was bought. According to the head ministry--the Ministry of the Communications Equipment Industry--this figure was less than in the Ministry of the Radio Industry (28 and 49 percent). Little more than 4 percent will return to the plants (again, the figures vary--for the Ministry of the Communications Equipment Industry--3.6 percent, the Ministry of the Radio Industry--4.7 percent, and the Ministry of the Electronics Industry--7.6 percent).

#### What To Increase and To What Level?

In the Orbita company store of the USSR Ministry of the Communications Equipment Industry one can see almost all the sets produced by the branch and learn a great deal about their technical specifications. They have exhibited new sets of the third generation using integrated microcircuits (of the USTsT type) which have been used since 1983 and have gone into mass production under the current five-year year plan. These are the Elektron Ts-265D/280D and Ts-380D, the Gorizont Ts-255 and others. They have enticing consumer characteristics: they are light, they consume much less electricity energy, and the picture is much brighter. But why are there so many complaints? Why do many consumers and even repair services think that the old television sets were more reliable? Let us try to figure out what the level of reliability of various generations of color television sets is and how it can be determined.

"It is the greatest deception to think that the old bulb and bulb-semiconductor models were more reliable," argued L. G. Semenov, who for many years worked as head engineer and at the same time deputy director for science of the branch television institute. "The reliability of the sets of the third generation is greater by a factor of 1.7 than that of the old set, they operate up to 5,300 hours without breaking down, while the old ones operated for 3,500 hours. This is high reliability. According to data from investigations, a color television set is operated for an average of 4 hours a day or approximately 1,500 hours a year. This means that this is one breakdown in 3.5 years of operation. This is not bad at all for such complicated equipment. But this is not the ceiling. The new generation of television sets has a great potential reliability. In the bulb-semiconductor sets during the 20 years of their production the reliability could be increased only by half--they were energy-intensive and within the set the temperature was high and therefore in principle they were less reliable. In the new sets the design is such that the possibilities here are almost limitless. During the five-year plan we intend to increase the reliability by a factor of 2. As compared to foreign models it is necessary to distinguish that there they have models intended for mass consumption and there are also



unique models. The mass consumption models, according to our data, are at the same level as our technical equipment of the same class. They also operate for 5,000-6,000 hours before the first breakdown, and their capacity and weight are the same. But the clarity of the foreign sets is better--our picture tubes are not as good. And that same brightness is achieved with less power--55-60 watts, while ours take 70-80. But the reliability of our television sets is increasing and we are getting more complaints. In a short period of time the branch sharply increased the volumes of output and the rates are accelerating. Now 22 million people have color television sets, and during the five-year plan the number will increase to somewhere around 40 million, that is, it will approximately double. The service is not keeping up, for the repair workers no longer have 5-6, but 12 repair jobs a day, and there are not enough spare parts....

Specialists at the Television Institute agree with the head engineer of the main board of the USSR Ministry of the Communications Equipment Industry, B. N. Chernov.

"The equipment is very complicated, it cannot operate without breakdowns, and they break down abroad as well (1). Moreover, we have poor repair: in places where it is necessary to replace a block in a television set without any discussion, the squabbling and torments of the owners begin...."

And so specialists of the branch are optimistic and think the reason for the dissatisfaction of the consumers are the shortcomings in the sphere of repair and...mass output, although according to all laws of economics, mass production makes it possible to adjust the design and reduce the defects.

And here is how the situation with respect to reliability is evaluated by the head engineer of the Novosibirsk Oblast, Rembyttekhnika, L. G. Ustyantsev.

"In the new television sets the 'picture' is better but I could not say that about the reliability. We received three new Elektrons from Lvov in order to train the repair personnel. And two were broken. The soldering did not hold and the volume could not be regulated. All these are violations of technology. There was carelessness in the assembly. Let us try to evaluate the statistics of reliability from our point of view, that of repair. Let us take the Minsk Gorizonts. Here are the normatives for the expenditure of spare parts. For every 100 television sets there are 278 parts, that is, repair jobs. This is an average of about three a year. According to the rules for exchange, with five simple defects and two complicated ones, or one complicated one and three simple ones they give a ticket for return. But here three repair jobs have already been included. If one excludes two-thirds of the television sets which will serve reliably and have lasted through the guarantee period, and distribute these repair jobs over the rest of them, this is five repair jobs, and it turns out that there are even more. This is an interesting statistic...."

But how does one reconcile the statements of specialists from the branch with information that not 4 percent, but one-third or even more of the sets must be returned to the plant even with the modern, contradictory Fundamentals of Civil Legislation and Rules for Exchange? (According to Article 41 of the

"Fundamentals" when shortcomings are discovered in an item that has been acquired, the consumer has the right by his own choice to demand either its replacement or a price reduction or elimination of the shortcomings free of charge or a dissolution of the agreement and his money back).

Information about reliability all flows together and is generalized in the branch institute. Other departments also use these data. Here special methods are used for testing the liability of equipment from all manufacturing plants. Here they think that little is said about the data from the Central Statistical Administration concerning the percentage of complaints (returns to the plant) and the percentage of equipment that does not last through the warranty period. How do the specialists of the branch substantiate this? "Let us take, say, the Rubinas. They have one of the best indicators concerning complaints. But what do they say about it? A large proportion of the products are sold in the Moscow where there is a company service center. This sharply reduces the number of returns. For it sometimes happens that the defect is a trifle, that the repair workers write out a ticket...."

Let us say that even if this is the case the consumer is only taking advantage of his legal right--to get rid of a defective item. This is a right that was taken away from him by the manufacturing ministries. And the reduction in the number of returns in places where there are company censors shows not only the increased liability, but also because the "first aid" is working well. In and of itself this is not bad, but it would be better if the equipment "got sick" less frequently.

As concerns the good indicators of performance until breakdown, these are the results of factory testing at the manufacturing plants. In the institutes they think that all brands of television sets of the third generation have approximately the same reliability and there is no difference between the Gorizonts and the Rubinas. True, they recall in passing the "operational reliability for the consumer" which is approaching but has not yet reached the data from factory testing....

"Plant testing, as a rule, gives one an idea only about the potential of the design," admits the head designer of television sets of the U.S. TsT of the Branch Institute, O. M. Artyukhov.

In subsequent discussion it became clear that, although the plant testing, in the opinion of specialists of the television branch, are in principle more reliable than any others, there are still "loopholes." But there are no data about the "operational reliability," that is, how the equipment operates in the apartment and not in the factory, nor are there any post-warranty repair jobs. In the statistics concerning returns they do not even pretend to include transportation breakdowns which are discussed so heatedly in the institute.

"But in the sorting areas the railroad cars roll down and crash against other cars.... We conduct brutal testing in the institute--we throw the sets from a height of a meter and a half onto concrete. But the loaders throw them again and in the wrong way. They used to be more careful with the television sets--they weighed 60 kilograms. Now they have become lighter, and so it is easier

to throw them. We are thinking about how to put four television sets in one package so that they will not throw them. Mechanically, our television sets are the most durable in the world. But still they break while on the road. World practice uses special vehicles with containers and inflated rubber bags for transportation. But we still have to estimate the damage during transportation. To do this we will receive instruments which we shall put inside the box. They will show whether the television set was broken on the road or whether it was shipped carefully...." O. M. Artyukhov, the head designer, answered the question about which television set the consumer should choose: "Take the one you like which has the best picture. You can get a good television set of any brand. If you are lucky...." But what about the Gosstandart? The requirements are constantly becoming stricter, and since 1987 the norm of service until the first breakdown is being increased to 7,500 hours. Specialists think that such a step is impossible in just a few months. What will be the solution to this problem?

It would seem that the restructuring of the work of branches that produce television sets should begin with lifting the curtain from the indicators and giving an objective evaluation of their reliability, without looking forward and confusing what is desired and what is real. Up to this point this amount is an equation with many unknowns. It is important to change the approach to reliability itself. From five-year to five-year plan the branches promised to increase it in color television sets by a factor of 1.5-2, during the 12th Five-Year Plan--it should be doubled, thus raising it to 10,000 hours. But this is juggling figures. It is necessary to abandon the methods of evaluating reliability according to factory tests. Without output volumes of, say, 500,000-800,000 a year, what can the results of testing only 50 television sets tell us? And the main thing is that we must seriously compare our television sets with the world level and take a course toward catching up with the best world models and evaluate the reliability during the post-warranty period in cooperation with the Ministry of Trade and the repair services. Previously Rembyttekhnika drew up monthly reports on the reasons for the failure of various models. They have now stopped doing this, turning everything over to the plants and branch institute. This has by no means contributed to the reliability of the statistics.

#### And The Causes Have Their Own Causes

During packing in a styrofoam box that protects from transportation damage (it is purchased abroad and the material for one box costs \$8, the color television set is subjected to punishment that other complicated items never experience. Vibration while it is turned on reveals poor contacts, shorts, weak soldered spots and other technological defects which cannot be noticed even under a microscope. Then comes a heat test which "burns out" the defects of the batching items that were not revealed during the initial examination. Then the television set is again turned on for 24 hours. If it has not broken down it is checked by the division for technical control. Then it goes to the vibration stand again.

But what is revealed by such brutal and, let us note, costly control and why does it not always, far from always, put a stop to defective work? What are the reasons for this?

"Batching items, and again batching items," says the head engineer of the main administration, B. N. Chernov. This accounts for 75 percent of the breakdowns, and this conclusion was confirmed by an authorized commission...."

L. G. Semenov thinks:

"The reliability of complicated household equipment is the peak of the pyramid, whose base are the branches that extract raw material. And so it goes layer upon layer, higher and higher. But you should not think that we are blaming everything on our associated workers, the more so since they have their own difficulties: the technology for obtaining pure materials is poorly developed, there is no reserve of capacities, the equipment is outdated, reconstruction is needed, and so forth. And these branches also look in the direction of their suppliers and their associated workers. All gazes are turned toward the branches that produce the final results. We understand that reliability is problem No 1. And although the situation is changing for the better, it is doing so very slowly, and I do not see any good prospects. This is why I am leaving my post, although I love my work and I am proud that Russian scholars have laid the basis for color television. But this is just personal. We are evaluating what we have to work with. The quality of the picture tubes is far too poor; we reject more than 10 percent. We annually receive 10 million rubles' worth of fines from the Ministry of the Electronics Industry. But they do not give us high-quality batching items. We need intake and, even better, output control in the branches that produce batching items. But the Ministry of the Electronics Industry has everything upside down: we produce things and you check on us.... Perhaps something will improve with the introduction of state receiving...."

One cannot say that the Ministry of the Communications Equipment Industry is indifferent to this situation. A prolonged war has been under way with the Ministry of the Electronics Industry and with the participation of the Gosstandart and the higher directive agencies. They are trying to introduce stricter norms of reliability for the associated workers and introduce more rigid technical specifications and OST's. Not all of them are being fulfilled. One out of 10 carloads of picture tubes are returned because of defects--is this not to our disadvantage? The work of the enterprises that manufacture television sets is also disorganized--but more about that later. The technical specifications do not stipulate tests of integrated circuits and transistors, or the volume of these tests is inadequate. All this pertains to defective work. The requirement introduced by the Gosstandart to "catch" defects in batching items with the help of the so-called "heat mockup--heating to 100 degrees for 5-6 days--is not being fulfilled by the Ministry of the Electronics Industry. A prepared television set goes through the heat mockup but for a shorter period of time--60-70 hours.

In color television sets of the new generation there are fewer parts than in the bulb-semiconductor sets, but still the number is greater than in analogous foreign sets by a factor of 1.5-2. Because of the lack of certain integrated circuits they are replaced by outdated elements. The schematics are becoming more complicated and this again reduces reliability. The shortage of batching items is standing in the way of placing the relations between the ministries

that produce television sets and the Ministry of the Electronics Industry on a serious business basis. The branch was unable to arrange for the output of new, high-quality picture tubes or integrated microcircuits. Therefore the enterprises that produce television sets close their eyes to defects in picture tubes and batching items.

"We could return entire batches of picture tubes," they say in the Institute's Department for Reliability. "But our plants would come to a halt. No 'extras' are envisioned and if you reject defective picture tubes and so forth, you will not fulfill the plan. It sometimes happens that defective picture tubes about which certain plants have written complaints are shipped on, into more remote areas...."

This egregious fact is known to everyone, but what can they do? The plan in units, it is the main thing for everyone, and they will do everything for it.... The situation does not especially surprise anyone. For this is economic sabotage. It is better to do nothing at all than to put out defective items.

#### Small Secrets of the "Kitchen"

If we take only the production rejections of television sets and, according to the statement of branch specialists, they amount to 20-25 percent, the main reason for this is the poor-quality soldering, assembly and regulations. In television sets of the third generation there are considerably fewer soldered points than there are with bulb sets, "only" 2,600. The automated machines, which produce 13 percent of the nonsoldered surfaces, are "augmented" by a group of workers with soldering irons. Reliability means also observance of technical conditions and the attentiveness of the operators. And here one can see quite well both the external and internal size of reliability, as on the surface of the Mobius, where one flows smoothly into the other. The quality of soldering also depends on batching items. And the irregularity of the delivery of batching items by plants of the branch leads to interruptions in the technology--at the end of the month quality is not the point; the plan must be fulfilled: the batching items go onto the conveyor "from the wheels," bypassing the warehouse and intake control. And the Division for Technical Control closes its eyes to all this. Plant capacities are released from the less labor-intensive new models, but all of this is "eaten up" by the irregularity of the deliveries of batching items.

As they admit in the branch institute: If the new television sets were made conscientiously, carrying out the technical process in each stage, it would be possible to increase their reliability up to 5,000 hours of operation before the first breakdown without additional specifications. There have even been "experiments"--by the time the commission would arrive everything would be all right. Here too they admit producing mass quantities of defective goods.

But the reliability of batching items depends a great deal on the perfection of the design development. Careful design development is especially important now that there will be more of the mass-produced unified model of the television set of the third generation (3 USTsT). These brands of television sets will differ only in external appearance and certain changes and service

devices, for example, remote control. They will be produced for a long time. The television set can be modernized by changing the element base since it consists of two models, and television sets of the fourth generation will be assimilated on the basis of this. The design solutions more or less compensate for the lack of certain necessary batching items and the inadequate quality of those that are available. Thus 97 percent of the elements operate under "merciful" conditions and are used with a coefficient of loading of 0.7. In the opinion of the head designer, O. M. Artyukhov, there will be no weak spots in the television sets of the new generation. But the weak spots have been found in the organization of the matter: the branch institute, which does not have a good technological or production base, "experimented" essentially on the entire branch. They enlisted all the design bureaus of the branch that were developing individual components under agreement. They very rapidly designed seven types of television sets of the new generation and one intermediate one. Working on the existing element base, the designers had to resort to palliative solutions and complicate the design. This reduces reliability. And the defects are not slow in making themselves known.

L. N. Ustyantsev, the head engineer of the Novosiblborembyttekhnik Association: the same transistors or microcircuits are put in different television sets with different picture tubes. And they act in different ways: in one case there are almost no failures, while in another case they are everywhere. The plant is arranging protection, but it is ineffective. This is a design defect. There is no feedback from the plants. The plants send information to the repair workers about what must be done about one defect or another. One asks, if these defects have been known for a long time, why not change the design--for example, substitute one condensor with another that is more reliable? The difference in price is 2 kopecks. We multiply this by three and we obtain 4 kopecks. And everything rests on this.... But losses on repair and replacement are many times greater, not to mention the time and the nerves...."

"The plants are not interested in correcting their defects, even if they have been discovered," thinks O. M. Artyukhov. "It is necessary to change the documentation, and this takes a lot of time. Sometimes even for a minor change for the better, it is necessary to change an entire printed plate. This is not done in a moment...."

Added to the technological difficulties is the outdated equipment and fittings for producing television sets of the new generation, which many enterprises develop themselves for themselves, as well as the shortage for modern diagnostic equipment for control operations (when tuning they do not always "check on" the quality and evaluate only the operation of the equipment because the parameters are evaluated visually, in terms of the simplest television signals).

The production of color television sets is dispersed among 30 plants of four ministries and many of them "make an unnecessary fuss" having insignificant volumes of output. Although it is recognized that the production of any consumer goods can be called serious only when their output reaches 250,000-300,000 a year. In television production, along with the giant (the Minsk Gorizont, for example, produces 850,000 television sets, of which 260,000 are

colored, and the Lvov Elektron produces 350,000 television sets), there are "dwarfs" where the volume of production of color television sets hardly exceeds 10,000. Of course the possibilities of improving products at these enterprises are more limited than at the large ones.

But who bears responsibility for the defective work? The GOST has established even the "receiving level of quality" at 6.5 percent defects in the entire batch. The price of a television set includes 30 rubles for future warranty repair. True, "above-plan" losses from defective work and the difference between the normative for warranty repair and the actual cost of these repair jobs also count as losses from defective work, worsening the economic indicators of the plants. For 1 percent of complaints the material incentive fund is reduced by 5 percent, but on the whole--by no more than 20 percent.... Moreover, equipment that is returned to the plant is excluded from the plan and this amounts to 200,000 a year. But this does not preclude poor work.

The real problem of the television industry has been the lack of goal-directed, concentrated scientific research. It is carried out in the branches that produce and service television sets. But one can see no unity of scientific forces or coordination. Just as there are no unified guidelines for repair enterprises, the Gosteleradio, Gosstandart, and trade. All of them take their own paths, although they have the same goal--the owner of the television set, the purchaser should be satisfied with his equipment.

#### A New Dress With Old Wholes

1987 will be a turning point for the television branches: for the first time they do not plan to produce bulb-semiconductor sets. They are yesterday's tele-equipment and in developed countries they "disappeared from the scene" 10 years ago. Our changeover to microelectronics, which was earmarked for 1985 the outdated models were produced with the promise that in 1986 there would be no more, but in 1986 about one-third of the output was composed of the bulb-semiconductor sets. And the Ministry of the Communications Equipment Industry and the Ministry of Trade are cautious when speaking about 1987: we do not plan, but we will not rule out that there will be 600,000-700,000 less--something like production reserves....

In Orbita the equipment is arranged in a pyramid in the center of the room. One is struck by the fact that these same actors who were in the artistic film that was shown during the morning, when it was rerun, looked different on dozens of screens of various kinds of television sets. This difference depends on the generation of the television set. We are now still producing and selling television sets of three generations--lamp-semiconductor--ULTsPTI, semiconductor-integrated modules--UPIMTsT, and the new generation with integrated microcircuits and a unified chassis (USTsT). These sets can have different picture tubes. All this produces differences in the picture.

The head designer of the USTsT television sets, O. M. Artyukhov, evaluates the situation with the changeover to the new generation of television sets:

"Usually plants resist the new, the restructuring of production. But here the plants themselves have been eager to introduce the innovations, seeing their

advantages, and they have entered into the plan, if only little by little. The new 3 USTsT television sets are less labor-intensive and they are convenient to produce. They have fewer parts and they are technologically advanced. We turned the entire branch around, and more than half of the plants were ready to produce them. And...the Ministry of the Electronics Industry did not give us the batching items. Some of them are still missing to this very day. We know them by heart. We have discussed them so much in bitter battles with the Ministry of the Electronics Industry. But nothing has changed."

Because of the lack of an element base it is difficult to fulfill the assignment for developing television sets of the fourth generation. In terms of their consumed energy capacity, sizes and weight they are no different from the preceding ones, but their element base has improved: the sound is better, they are automatically disconnected from the network, and the tuning is also automatic. By the end of 1984 the Ministry of the Communications Equipment Industry was supposed to have developed a base model, and the Ministry of the Electronics Industry was responsible for batching items. Up to this point not all the batching items have been developed and the technical specifications have not even been coordinated for some of them. It is impossible to "beat out" all the parts, even for an experimental batch of 100 in order to do tests for reliability. Another problem is that some of the new sets will be "new old television sets." This interesting hybrid is a television set of a new generation with a unified chassis but...an old picture tube. In the plans for 1987 more than half of the 3.7 million picture tubes are old ones, the so-called "plainer" ones. The Ministry of the Electronic Industry is back in the "Stone Age." And these "hybrids" mean that the power, the weight, and the picture will deteriorate with time and other consumer qualities have already deteriorated. Including reliability....

Of the television sets with a screen size of 61 centimeters along the diagonal, only less than a million will have the new plainer picture tube. Only enough picture tubes to fulfill the plan for the output of television sets will be produced; there is no reserve; and the trade will be fast and furious: who will get them. By 1990 the volume of output of color television sets of the third and fourth generations will reach 6.7 million. To do this it is necessary to have the corresponding increase in the capacities of the Ministry of the Electronics Industry.

"The design of the television sets of the new generation was developed rapidly--in a year to a year and a half. But in this speed there are also shortcomings. We should have 'tried out' several variants and selected the best. But because of the shortage of the technological and production base there was no possibility of doing this. And the documentation had to be changed because of the fact that we were delivered the wrong batching items.... Now we shall have to act in haste with television sets of the fourth generation. The development has been lying on the shelf for several years as it did for television sets of the third generation, and by this time it would have been possible to break them in well"--this is what O. M. Artyukhov thinks.

Another stone thrown at the Ministry of the Electronics Industry....



And so many of the models produced in 1987 will be "hybrids." Their consumer qualities will be worse than they could have been, and the model of television sets of the third generation could have been well developed. The distance between the development and series production is great. It is necessary to prepare production carefully. It has repeatedly slipped into our conversations that things did not go very well at first for any of the television sets and then the situation was rectified and the plants assimilated them. Therefore at first all the new models were less reliable than the old ones. But when they were "broken in" it was already time to replace them with new ones. We cannot allow this random time of "breaking in" of television sets of the new generation: the price might be too high. But can we make "guinea pigs" out of the consumers so they can help us to "break in" the new television sets over many years? This is again an economic absurdity: a new item, especially one that is mass-produced, must be better and more reliable than the preceding one, otherwise it will never be put into series production.

The repair branch must also be prepared for the new models, the more so since their repair is simpler in some ways: it is possible to replace consolidated components, and in some ways more complicated: in a component like this it is difficult to find the defect by hand, and there are diagnostic systems only in the large centers.

And another thing. The new television sets produce a significant economic effect. For 1 million television sets this means a savings of 150,000 kilowatts of electric energy, 6,500 tons of steel, and 3,500 tons of refined copper which is in short supply. Plus the labor-intensiveness is half as great. If all this were multiplied by the overall volume of output and then multiplied again by the years in which they could have been produced but were not produced.... One receives a significant sum. For all television sets consume about 20 billion kilowatt hours of electric energy--as much as is produced by the Bratskaya GES. If all the television sets were replaced with the latest ones the amount of required electric energy could be reduced by a factor of more than 2. It is worthwhile. And we cannot allow for these billions of kilowatt hours which could potentially be saved to be eaten up by outdated television sets.

If We Produce What We Do Not Need--We Purchase What We Do Not Want

At the interrepublic wholesale trade fair of commodities for cultural and domestic purposes in 1987 in Luzhniki there were about 50 models of color television sets, mainly of the new generation. Each manufacturing plant offers several models at various prices--from 640 to 1,250 rubles, with various screen sizes. There are nine models of the Lvov Elektrons alone. There are supermodels with improved consumer qualities, for example, remote control with infrared rays. When holding a small pencil box-shaped object with on and off buttons you can "control" your television set without getting up or while lying on the couch from a distance of 6 meters. The teletimer: the set turns on and off at an appointed time. Seven television games--a type of tennis, football, and "firing" at a moving target. A television which receives in addition to our SEKAM signal, the PAL signal as well. These sets

are being produced in small quantities: there are no batching items. The Fotons (Simferopol) also have remote control and they are developing an entertainment complex--television games, but not those where the ball jumps from player to player, but diverting games based on microprocessors. But this, unfortunately, is far into the future and design bureaus of many plants are working on it. Who will do it best and when will they do it?

There are not enough models with a modern appearance. Elektron has developed modern design solutions, but on the conveyor they use a plastic film that is called "asphalt." Our Shilyalises are purchased in capitalist countries, but only the "fillings" in the so-called "technological" casing. The mold for the wall of the television set is the most labor-intensive part of the fittings: it takes a year and a half to replace it. And here our television sets in their external appearance are in the style of the beginning of the 1960's of a "asphalt" color.

The chief of the Division for Economic Research of the Television Institute, A. B. Feldman, comments on the "production-consumption" situation.

"We have been studying the market for 15 years and we know a great deal about it. And we can formulate the prediction precisely. But this prediction--and it also coincides with the requirements of trade--is not always acted. What is offered to the consumers does not correspond to the potential demand. In the first place, television sets with a 51cm screen should be made larger by a factor of 1.5-2. Now their output is limited to the production of picture tubes. But the main thing is the fact that the market for television sets as a whole is not optimal. We produce about the same number of color and black and white sets, and the ratio should be 80:20, in favor of the colored ones, naturally. In developed countries practically every family has a color television set. Every family in our country also has a television set, but only 30 percent have colored ones. The potential market for color television sets is very great. According to our predictions, by 1990 two-thirds of the overall output of about 10 million television sets will be colored. What is necessary to accomplish this?

We need a rational structure for the output of television sets with different screen sizes--61cm and 51cm. They should be produced in equal amounts, but now the ratio is 3:1. The more so since the difference in price is 110 rubles. Naturally, people would buy more if they could be sure of the reliability of the television sets. A curious detail: when in 1983 the prices of color television sets dropped by 17 percent, the Rubin, Temp and Raduga retained their previous prices. But the sales did not drop: these television sets had a good reputation among the consumers, and they bought them even though they became more expensive than analogous models.... According to predictions, in order to sell more color television sets it will be necessary to lower the prices.

All color television sets of the old types are produced at a loss for the plant since their prices were dropped. The television sets of the new generation should be above all profitable. The economic effect from their assimilation in the national economy is very great, and some of it goes into the price. But here is the paradox: the television sets of the new generation

are considerably less labor-intensive, they have fewer batching items, and the production cost is higher. The fact is that a large part is composed of the cost of the batching items. In world practice it is little more than one-third of the price of the television set and is not increasing, although electronic equipment items are rapidly being perfected. Our prices for electronic equipment are not increasing, but every new generation of television sets is more costly than the last one. The value of the "electronic stuffings" in the new television set is more than 40 percent, and the parts themselves are half as much. But, since their production is profitable, there is a basis for reducing the prices.

#### A Crucial Moment: What Lies Ahead?

When you speak with specialists from the branch you see that some things are still getting better, although slowly, very slowly. The poor quality of radioelectronic equipment has been providing continuous material for publications for a long time, both for the satirical articles and for essays about problems. Six years ago the newspaper SOTSIALISTICHESKAYA INDUSTRIYA held a round table discussion on problems of the production of television sets in which leaders of the branch made promises to change things for the better. But there have been no significant changes. And now there is a marked desire to stop at half-measures. After long squabbling about who was ultimately guilty for the extremely large number of repair jobs, mutual complaints between ministries that produce television sets and the consumer service ministries, and in a number of areas of the country company repair will be introduced. This will make the position of the owners easier, for after all the main thing is not to put out the fire quickly, but to make it seem that it never existed.

Television sets of the new generation are being introduced, although very late. But the "program" for the development of television equipment for a 1981-1985 was not fulfilled. New "screens"--electron ray tubes--are being assimilated. New systems are being developed for protection from self-ignition--television sets of the new generation are much better in this respect. Procedures are being introduced which improve quality and reliability. The Ministry of the Electronics Industry is assimilating new microcircuits. But the buyer feels no effect from all this considerable amount of work. The new television sets are potentially more reliable, but they are not as well assimilated by production and on the whole the results are not very visible. And we try to change unfavorable tendencies quietly, by improving and perfecting production, cautiously from year to year imposing stricter technical specifications, looking not at the world level but at what can be done in the plants. There has been no serious restructuring in the branch and so far none is suggested. But the "merciful conditions" for unreliable batching items is changing into "merciful conditions" for the branches that produce television sets and "electronic stuffings" for them. But for the purchasers who invest in this "miracle" of electronics 3 or more months' wages, this ends up, to use a sports term, as a "severe pressure throughout the entire field." The leadership of the branch, relying on "their own" statistics, have the possibility of asserting that on the whole everything is all right, and if something breaks, then--"nothing under the sun lasts forever." A philosophical attitude toward the ordeals of the owners,

which is based on the postulate "We do not have it any worse than other people," generates unanimity at all levels.

The lack of real economic responsibility on the part of the manufacturing enterprises for defective work and poor reliability, the "amnesty" of the branches that produce batching items, plus the underestimation of the significance of high quality and reliability of consumer goods as a program requirement have led to a situation where the branch is faced with the prospects of drowning in a flood of complaints.

A half-measure is not enough to rectify the situation, a decisive restructuring is needed. It has repeatedly been suggested, and this was emphasized at the 27th CPSU Congress, that we make the manufacturing plants strictly dependent on the quality of their products. All the responsibility for unsold goods, poor quality, and complaints should be borne by the manufacturer! One can think about the forms. This would make the associated workers try harder also. Is it not strange that we have known about unreliable components and shortcomings in circuits for decades, but they are not disappearing. Moreover, intake, like output control, are half-measures; at best they reveal defects, but they do not help to produce the necessary quantity of batching items and prepared items of the necessary quality. The more so since in a television set there are thousands of parts and it is complicated and time-consuming to check all of them. So far the experience in coordinating the work of associated ministries and creating joint programs have not produced any appreciable results. Perhaps we should think about organizing large associations that manufacture electronic equipment and assemble television sets, which have large scientific research subdivisions, if such coordination could be achieved under existing conditions?

Another means about which much has been written is one that would seem to be obvious, although in reality it exists more in theory than in practice. These are comprehensive systems of product quality control (here we can rely on the experience of Japan and other foreign countries) and the predominance of qualitative and not quantitative indicators in the material and moral incentives at all levels, and, the main thing, at each workplace, and each worker should be informed of these. Now of all the elements of quality control most attention is devoted to strengthening control and not preventing the output of unacceptable products.

And things will not change if the entire evaluation of the quality and technical level of the consumer goods that are being produced and developed remains concentrated in the branch that produces this commodity. In the world there is experience in organizing cost-accounting interdepartmental centers for studying demand for consumer goods, including television sets, which verify their quality and conduct tests, especially with complicated new kinds of equipment. Data on what components break down and the convenience or inconvenience of using them are turned over to the manufacturing plants. Series produced items are also checked to see whether or not they meet the standards and they are compared with commodities of the same kind. Numerous journals and consumer reference guides are published and predictions are made of the demand. There are mass questionnaires that encompass hundreds and thousands of owners. These centers exist, for example, in the GDR. New

commodities are put at the disposal of groups of buyers who hand down the final sentence which cannot be appealed with references to circumstances. Who will buy something that has not proved itself?

The system of administrative-legal protection of consumers in Japan is interesting. It operates almost completely at state expense. The Council for Protecting Consumer Interests which includes leaders of the most important ministries and was created under the cabinet of the Council of Ministers has been operating for more than 15 years. The Center for Problems of the Life of the People and the Bureau with the same name appeared in 1970 with the status of a special corporate body. The administration for economic planning created about 200 centers for consumer problems. About 20,000 tally clerks investigate the condition of consumer protection no less than 5 times a year.

The press has repeatedly spoken out in favor of creating consumers' centers and societies. As early as 1969 the chairman of Gosstandart at that time, V. V. Boytsov, noted that the quality control system for consumer goods had broken down and did not provide for communications between the producers and the consumers, who had to test in their own "home laboratories" the television sets and washing machines they had purchased. And the results were generally unknown to the plants, or they drown in a sea of "on the whole favorable" statistics.

We have a certain amount of experience in this in our country as well. The newspaper Vichernaya MOSKVA created a buyers' club more than a quarter of a century ago. The interest in this was so great that it even surprised the creators of the club. Some curious data were revealed: the plant never received any complaints about certain goods. But all they had to do was publish a photo and ask a question of how this thing worked and the remarks would flow in like a river. It turned out that few people would write the plant because few of them believed that their statement would be received as a guide to action.

And it would be better if the consumers were represented not by the Ministry of Trade, whose interests do not enable it always and in everything to protect the interests of the consumers, and not the Gosstandart, which cannot establish a rigid ban against unsuitable items either, for it does not have economic levers that influence those that produce the television set that has broken down repeatedly during the first year of its service. It is not on our behalf that the output is permitted or prohibited. But we are with you.

The decree of the CPSU Central Committee and the USSR Council of Ministers adopted in May 1986, "On Measures for Radically Improving Product Quality," envisions measures for preventing the output of poor-quality products. In particular, the assignments for developing batching items will become mandatory for all who produce them. The associations and enterprises will bear full responsibility for product quality and making sure that it is in line with the world level. The consumers will be able to unilaterally dissolve an agreement with the supplier when it repeatedly delivers products of a poor quality. A special agency for departmental control has been created--the state receiving office. There is to be material interest in producing high-quality products which is augmented by strict material responsibility.

Certain of these measures, as we have seen from the example of the branch that produces television sets, have been introduced quietly before this as well, for example, with intake control. But they were not in complete volume and they were not comprehensive. But the main thing is that up to this point considerations of production necessity and the plan have been moved back not even to the second plane, but much further into the background by quality requirements. The psychology whereby all the rest of the considerations are considered only from the standpoint of quality and the requirements of the consumers has not been formulated, which one can see clearly in the position of the management of the branch or the branch institute. And if the current psychology is not changed, it will be difficult to embody the good decisions, quite a few of which were made even in the preceding stages.

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## MAJORITY OF TELEVISION VIEWERS SEE BLACK AND WHITE

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 5, May 87 pp 135-149

[Article by Ye. A. Grechukhin, engineer (Moscow): "Color Television Sets: The Main Thing Is Reliability"]

[Text] At the beginning of 1986 all television centers of the country (there are about 120 of them) changed over to color transmission, but the majority of our television viewers continue to watch black and white programs. Yet it is repeatedly asserted in the mass and specialized press that the demand for color television sets is satisfied and even the "caprices of secondary demand" are beginning to prevail, the more so since in 1982-1983 the commodity supplies in trade "unexpectedly" increased considerably. Let us see if that is so....

### Predictable "Unexpectedness"

In fact, as one can see from Figs. 1-2, since 1979-1980 there has been practically no shortage of color television sets in trade. But neither was there an unexpected increase of their commodity supplies in trade: in 1980 the unsold residual color television sets amounted to 0.8 million units, or 35 percent of their output in that same year. In subsequent years it increased significantly and reached 50-60 percent of the output in the corresponding year. And in 1986, according to calculations, the unsold residuals in the trade network amounted to no less than 40 percent of the output. Moreover, if the rates of increase in the production of color television sets in 1981-1985 had corresponded to the number that were ordered to be produced, the unsold residuals in trade would have been considerably greater. But if one takes into account the extremely low level of provision of color television sets for the population of our country, the reduction (and a significant one) of the growth rates of the production of color television sets can hardly be recognized as the best way of reducing commodity supplies in the trade network.

The stock of color television sets now amounts to little more than 20 percent of the overall stock (approximately 90 million units). The data presented in Figs. 1-4 confirm the considerable disproportion between the production and sales of color television sets throughout at least 15 years. There is an even

more significant proportion between the production and sales of black and white television sets. The unsold residuals of these in trade since 1962-1963 has increased in a linear progression, and in 1985-1986 it amounted to about 6 million units or more than 100 percent of the annual output.

Thus the prediction of branch specialists regarding the balance of the production and sales of black-and-white and color television sets (Footnote 1) turned out to be wrong.

At the same time, for example, in the United States and Japan, with a significantly greater provision of the population with color television sets (about 100 per 100 families) and with a significantly larger annual production of them both in terms of volume (about 15 million) and per capita (approximately 0.1 while for our country this indicator is little more than 0.01), there is no essential disproportion between the production and sales of television sets.

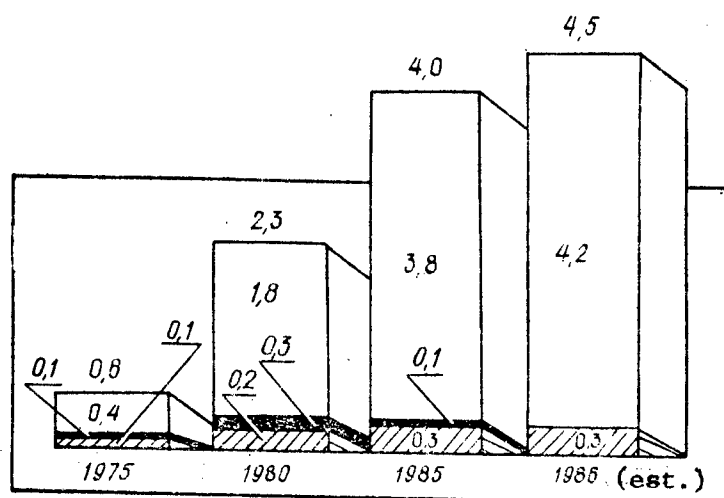


Fig. 1. Production and sales of color television sets, millions, in columns (from top to bottom): overall production; sales on domestic market; unsold residuals in the trade network during the year; exports.

At the same time, one cannot agree with the fairly frequent assertion that in recent years our country's population has been acquiring mainly color television sets and the black and white ones are mainly as second sets. Even in 1985-1986 the sale of black-and-white television sets to the population of the country amounted to less than half of the overall annual sales of television sets. In 1982-1983 these amounts were 34 and 38 percent, respectively, and in 1981--30 percent. The incorrectness of the assertion made by specialists that our country's population is acquiring mainly color television sets is obvious from the comparative data presented in Fig. 5 concerning the production and sales of black and white and color television sets in the various five-year plans in 1956-1985. Let us note for comparison



that in the United States and Japan, for example, a practically complete changeover of the stock of television sets from black and white to color took no more than 13-15 years (approximately from 1965 through 1980) although the population is still acquiring small quantities of black-and-white television sets (7-8 percent of the overall sales volume).

And although during 1980-1986 the rates of increase of the unsold residual of television sets in the trade network decreased considerably, it is still too early to make excessively optimistic predictions.

Thus for a long time there has been an extremely unusual and extremely undesirable situation for our economy in which, as before, prestigious consumer goods--color television sets that have higher consumer qualities--are accumulating in large quantities in commodity supplies in trade. And the overall value of these stocks, according to the most minimal estimates, is no less than 1 billion rubles. The basic reason for this is the poor reliability of the color television sets produced by enterprises of our industry.

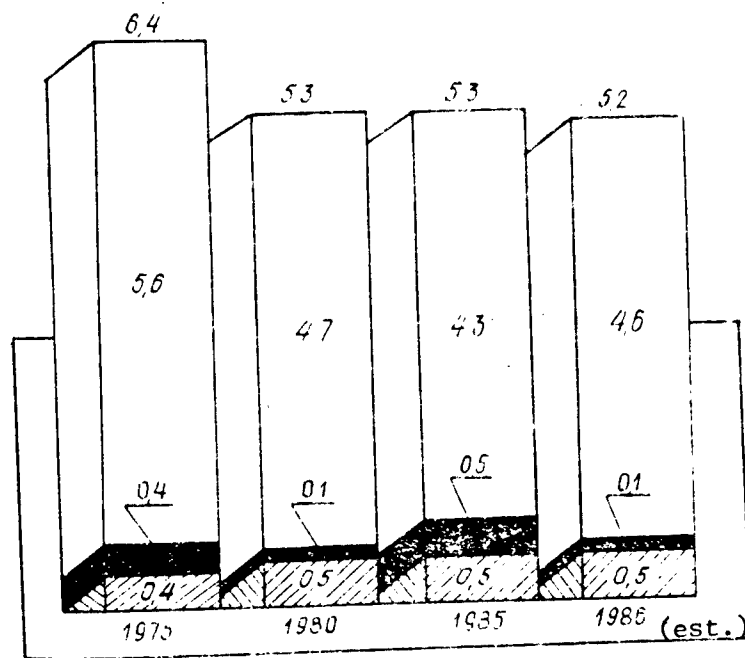


Fig. 2. Production and sales of black-and-white television sets, millions, in columns (from top to bottom: overall production, sales on domestic market; unsold residuals in trade network during the year; exports).

(Figures 1 and 2 were compiled from The Statistical Annual of the USSR Central Statistical Agency, "The USSR National Economy," for 1975-1985; statistical references of the USSR Ministry of Foreign Trade, "USSR Foreign Trade," for 1975-1985.)

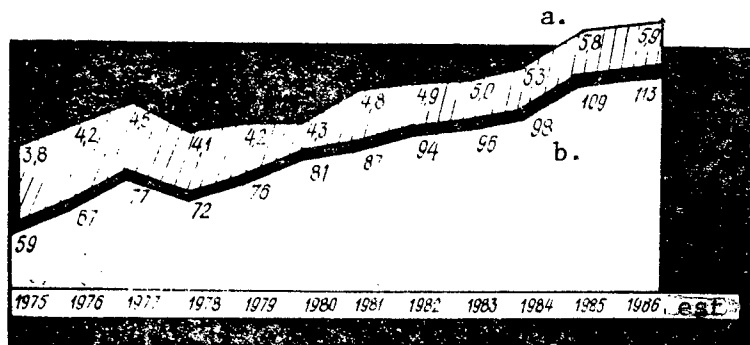


Fig. 3. Unsold residual of black-and-white television sets in trade network during 1975-1986 (1987--price reduction): a) percent of annual output; b) running total; millions of units.

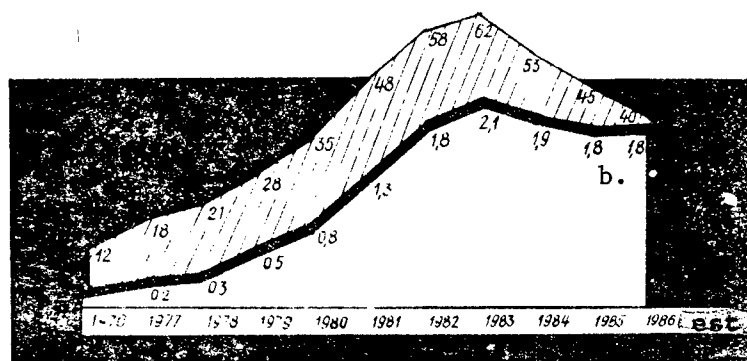


Fig. 4. Unsold residual of color television sets in trade network during 1976-1986; a) percent of annual output; b) running total, millions of units.

How is this situation explained by specialists of the branch television institute and workers of industrial enterprises and branch agencies? They consider the main reason to be "trade's inability to sell television sets," the inadequate number of sales on credit, the inefficient distribution among the various regions of the country, inadequate advertising, and also shortcomings in technical servicing and repair of television sets by enterprises of the Ministry of Consumer Services. These factors vary in significance but are by no means decisive.

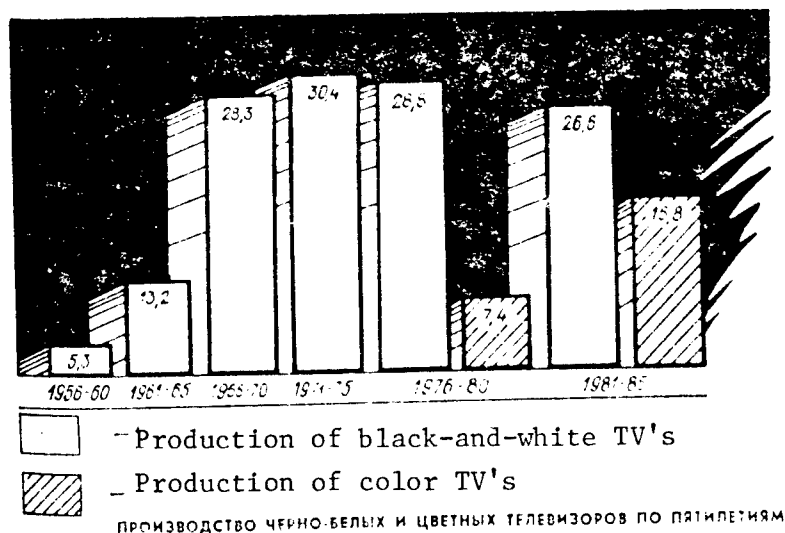


Fig. 5. Production of black-and-white and color television sets during various five-year plans.

(The figures concerning the production of color television sets from 1967 (the beginning of series production) through 1975 are not given. The volume was no more than 1.3 million units a year.)

Trade workers explain the situation by the lack of correspondence between the assortment of television sets that are produced and the consumer demand, the slow change in their assortment and the inadequate output of sets with principally new specifications. But during 1976-1980 alone industry assimilated more than 70 models (more precisely--brands) of color television sets, and in 1981-1985 this assortment was expanded even more, and beginning in 1982-1983 a considerable number of enterprises began series production of new color television sets of the third generation. Let us note that foreign firms have begun mass output of such items only after they have reached an acceptable level of operational reliability and a cost that is acceptable to the mass consumer. And the cost of color televisions as produced by firms of the United States have remained practically unchanged during the past 15-20 years, although their reliability has increased during this period by a factor of at least 5-7. Their consumer and technical specifications have also improved significantly.

Commodity supplies of black-and-white television sets are even more significant. It seems that the basic reason is a mistake on the part of trade and industry workers regarding the long-term dynamics of the balance of their production and sales. Added to this is the insufficiently high level of reliability, which exceeds the average operational reliability of color television sets by a factor of only 1.5-2 (Footnote 2).

## Is the "Family Friend" Healthy or Sick?

According to data of the RSFSR Ministry of Consumer Services, in 1985 no less than 40-50 percent of the color television sets acquired by the population that year underwent at least one warranty repair job. And every color television set was repaired an average of about three times, as a result of which a considerable number of owners had to return to the repair workers no less than 4-5 times with a subsequent replacement of the equipment or return to the trade network.

And if one takes into account the data of the RSFSR Ministry of Consumer Services and the USSR Central Statistical Administration and Ministry of Trade, during 1981-1985 the operational reliability of color television sets practically did not increase since the given amount (40-50 percent) of warranty repair jobs was essentially unchanged. And according to official data the reliability increased by a factor of only 1.3, although according to the state plan for standardization for 1981-1985 and according to the announcement of managers of the USSR Gosstandart, Ministry of the Communications Equipment Industry, and Ministry of the Radio Industry, it was intended to increase it by a factor of no less than 2.5-3 and color television sets would operate no less than 7,000 hours before the first breakdown by the end of 1985.

The operational reliability of domestic color television sets amounts to no more than 2,500-3,000 hours, and for some brands, particularly color television sets of the UPIMTsT type (with a certain exception of the Rubin Ts-202) and portable television sets (with the exception of Shilyalis) this amount is no more than 1,600-1,700 hours.

The reliability of new domestic color television sets of the third generation --the Rekord VTs-311, the Gorizont Ts-255, the Elektron Ts-265D and others that have been series produced since 1982-1985 and in the future will be the base ones for the enterprises of the television branch--is not very high yet either and amounts to no more than 3,500-3,700 hours. And there are many complaints about these television sets both from owners and from workers in trade and enterprises of the administrative consumer services.

The situation is explained to a significant degree by the extremely low norm of reliability established by the GOST for color television sets that are developed and produced. Before 1982-1983 this norm was so low that practically all industrial enterprises could achieve it without any special effort. In essence, it means that almost every color television set, even in the first year of operation, could be returned for at least one warranty repair job "with completely legitimate justification."

As a result of such a low norm of reliability, in 1979-1980 practically all color television sets were awarded the state Emblem of Quality. But even in 1981, as a result of numerous complaints from owners of television sets and trade and repair enterprises of the Ministry of Consumer Services, this Emblem of Quality was removed from all color television sets by a decision of the USSR Gosstandart. The same story was repeated in more recent times. In 1985, for example, the Rekord VTs-311 color television set was awarded the Emblem of

Quality, and the next year it was removed. What was the reason for this rash decision? These television sets were produced in small quantities and there could be no objective data concerning the results of operation by the consumers. The same story was repeated with the ZTsSUT-67 Elektron Ts-265D television sets produced by the Elektron Production Association essentially as an experimental batch. From the standpoint of the consumers, not to mention the requirements of technical progress and the need for the items that are produced to meet a high world level, it is difficult to understand this "technical policy" of the USSR Gosstandart. But it is also being repeated with respect to other commodities.

In 1984-1985 the norm for reliability for color television sets was increased by the USSR Gosstandart by a factor of more than 2, and the time of operation before the first breakdown was set at no less than 2,800-3,500 hours. But this norm is equivalent to saying that in the first year of operation by the consumers no less than 30-35 percent of the color television sets produced annually could be turned in for at least one warranty repair job. And a considerable number of them, taking into account the average statistical nature of this norm, would have several repair jobs. Beginning in 1987 the norm for reliability, by a decision of the USSR Gosstandart, is no less than 7,500 hours, and by 1990, according to an announcement of the chairman of the USSR Gosstandart, G. D. Kolmogorov, on central television (Footnote 3), it will be increased to \$10,000. Moreover, the norm for reliability for batching items for electronic equipment in color television sets is to be increased by a factor of no less than 10 by 1990!

But this is a typical example of attempts on the part of the USSR Gosstandart and other agencies to solve the problem of quality and reliability mainly through administrative means and not on the basis of careful engineering and economic analysis, the need for which was noted in the decree of the CPSU Central Committee and the USSR Council of Ministers, "On Measures for a Radical Improvement of Product Quality."

The unfeasibility of "power" norms of reliability is obvious. But along with this the managers of enterprises that produce television sets declare that two to three warranty repair jobs is "nothing so terrible," but in our country by someone's sleight of hand the question is "turned upside down," and the warranty period "has begun to be regarded as a period during which the television sets and other items should not break down," while abroad "everything is the opposite" (!) (Footnote 4).

Yet during 1981-1985 enterprises of the RSFSR Ministry of Consumer Services annually repaired an average of about half of all the black-and-white television sets belonging to the population of the RSFSR, and for color television sets, as a result of their lower level of reliability, this amount was considerably higher (by a factor of at least 1.5-2). During the first 2-3 years of operation practically all color television sets belonging to the population were turned in for repair. This is the average. And although quite a few television sets operate for a long time without repair, a sufficiently large number of them are repaired three to five times or even more. And this is brought about to a considerable degree not so much because of the quality of the repair of television sets by repair enterprises of the

Ministry of Consumer Services, as was frequently asserted by workers of the television branch, as it is by their low level of initial reliability.

Nonetheless many specialists of the branch assert that color and black-and-white television sets, after they have been initially broken in by the consumers during the warranty period, go on to operate reliably, as a rule. This "breaking in" period is unavoidable, according to their assertion, because of a "special dialectic" of reliability electronic devices establish by foreign specialists, according to which the period of operation in which the number of breakdowns is maximal is equal to the warranty period. And there is nothing so terrible as the television sets break down two or three times during the first year. They will operate subsequently without any trouble.

Yet, according to foreign data, by the end of the first 3 years of operation by the consumers, the overall quantity of color television sets that are submitted for repair that are produced by firms of the FRG does not exceed 28-30 percent, and those produced by firms in Japan--18-20 percent. Moreover, the break-in period during the process of operation by the consumers amounts to an average of no more than 2 months, during which time no more than 9 percent of the color television sets produced in the FRG begin to malfunction, and no more than 2 percent of those produced by firms of Japan. Therefore one can consider that the Japanese television sets have practically no break-in period during the process of their operation by the consumers. This is because of their high reliability.

Not Only Or Even Not So Much Batching Items....

Workers of the television branch frequently assert that the main reason for the low level of reliability of the television sets is the poor quality and reliability of batching items of electronic equipment, the basic list of which is produced by enterprises of the Ministry of the Electronics Industry. This is the same thing that is being said by workers of other branches that produce various kinds of household radioelectronic equipment (radios, tape recorders and so forth) or industrial products that utilize items of electronic equipment (for example, computers, industrial robots, and so forth). It has become a common assertion that 70-80 percent of the failures of color television sets are caused by the poor quality and reliability of batching items of electronic equipment (transistors, microcircuits, picture tubes and so forth) (Footnote 5).

All this is far from being true. An analysis conducted by the author over several years are the results of operation by the consumers of bulb-semiconductor and semiconductor-integrated color television sets (Rubin-714, Temp-714/733, Elektron-716/722 and others), semiconductor-integrated module (Rubin Ts-202), Berezhka Ts-202 and Slavutich Ts-202) and also certain portable color television sets showed during the process of operation an average of no less than 25-35 percent of them break down because of production and technological defects. But the workers of the television branch (and particularly of the branch television institute) usually assert that this amount does not exceed 15-20 percent, and according to specialists of the Gorizont Production Association it is no more than 12 percent, while those of

the Moscow Temp Production Association say that it is not even more than 5-7 percent. Let us note that such a low level of production breakdowns has not been achieved even in the best foreign television sets or other household radioelectronic equipment, where it amounts to an average of 25-30 percent.

According to data of the Leningrad Elektron Production Association, 20-30 percent of the failures of color television sets produced by this association were caused by production defects. For a certain branch of color television sets this amount, according to data of the repair enterprises of the Ministry of Consumer Services, is even considerably more.

As concerns failures of television sets because of the breakdown of their batching items, the figures concerning the number of these failures are only formal-statistical and do not characterize either the real reasons for the failures of batching items of electronic equipment or the real reason for the failures of the television sets themselves. The failures of batching items of electronic equipment can be both the result of their poor quality or poor reliability and the result of incorrect conditions for their use in a television set. But workers of branches that produce television sets do not mention this, as a rule. And this is natural: it is by such impressive figures that they justify the poor quality of television sets.

Here we need an honest and detailed analysis of the reasons for the failure of various parts of items of electronic equipment. Let us note that according to the results of the analysis conducted by the author, out of 900 parts of the electrical circuit of bulb-semiconductor and semiconductor-integrated color television sets, 50 percent of the failures come from only 10 parts (little more than 1 percent), and 70-80 percent come from 30-35 parts. And in many of the parts where the failures are most frequent they use batching items of electronic equipment that are applied in other parts of the electronic circuit and there they fail very rarely. Or they are used in other color or black-and-white television sets and other household radioelectronic equipment where, as a rule, they do not fail.

Half of all the failures of batching items of electronic equipment in practically all of the vulnerable places (and for certain ones even considerably more) are caused by circuit-design shortcomings, production-technological violations in the process of series production of television sets, and the insufficiently careful engineering support for this production. All this is well known to specialists in the television branch, but it is lost in the flow of formal-statistical and externally impressive numerical data. This is also known by specialists of the Ministry of the Electronics Industry, as a result of which they do not pay much attention to complaints of developers and manufacturers of television sets. But on the whole one cannot recognize the level of quality and reliability of the batching items as being high enough.

The situation with failures of batching items is similar for portable and semiconductor-integrated module color television sets. If one takes into account the low level of reliability of equipment of the new generation, this would also be fairly applied to them.

On the whole the reliability of color television sets depends approximately equally on the quality of the development, the level of technology and the art of production, including engineering support for production, and also the quality and reliability of batching items of electronic equipment. This conclusion is confirmed by foreign data.

Leave Engineering to the Engineers, But....

Improving the quality and reliability of color and black-and-white television sets is not helped by the fact that the activity of industrial enterprises is evaluated according to the volume of output or that unconditional priority is given to quantitative indicators (volume of output of television sets) over quality and reliability.

With the introduction in 1983 of an indicator that characterizes the volume of output of consumer goods per ruble of the wage fund, the situation was exacerbated since this indicator is essentially a gross indicator and motivates the enterprises to fulfill primarily quantitative indicators to the detriment of quality and reliability. The permanent "Provisions Concerning Stimulation of the Production of Consumer Goods, Fulfillment of Established Assignments for the Production of These Goods Per Ruble of the Wage Fund and Improvement of Their Quality" that was introduced in 1986 did not eliminate the imperfection of this indicator since the regulation of the responsibility of the managers for the quality and reliability of the items that are produced was not formulated clearly enough in it, and the number of indicators envisioned for this regulation is extremely limited.

The indicators of quality and reliability that are applied (the number of television sets turned in for warranty repair and complaints that are made against them), in spite of the great economic losses to the enterprises because of paying for warranty repair jobs, complaints and other fines, do not sufficiently motivate the enterprises to improve reliability. In essence industrial enterprises, like repair enterprises of the Ministry of Consumer Services, are in no way responsible for the excessively large number of post-warranty repair jobs. Therefore the enterprises devote little attention to increasing reliability--the indicator that is most important to the owners of the television sets.

There is nothing to regulate the responsibility of the branch television institutes, design organizations, or head industrial enterprises (nor engineering subdivisions of standby industrial enterprises) for the quality of the development of television sets or their preparation for series production.

The policy for certification of industrial products according to the quality categories does not provide incentive for improving quality and reliability either. And the "Policy for Certification of Industrial Products in Two Quality Categories" introduced on 1 January 1984, paradoxical as it may be, does not do as good a job of "working" for these purposes as the preceding one did. When certifying items of complicated household equipment, including television sets, it is no longer compulsory to have the repair enterprises and trade organizations report the results of their operation by the consumers. Thus the objectivity of the certification of these items and the requirements



have decreased, although the managers of the USSR Gosstandart frequently assert that with the introduction of the new "Policy for the Certification of Industrial Products in Two Quality Categories" the objectivity of the certification of industrial items has increased significantly, and the requirements have become considerably more rigid (Footnote 6).

Here increased objectivity of certification means that it will be carried only on the basis of the results of testing of certified products in the corresponding testing organizations. But an extremely small number (usually several dozen) samples of household equipment items are tested as compared to the number under warranty, and especially as compared to the overall number that are being used.

Data concerning their reliability according to the results of these tests, as a rule, are not very reliable and frequently they differ significantly from the real operational reliability. And this difference is the greater the lower the actual operational reliability of these items.

#### Instead of a Summary

Let us begin with the most obvious thing. Above all, it is necessary to admit that the level of quality and reliability of color television sets is a long ways away both from the requirements of the consumers and from the potentially possible level. And when making management decisions basic attention should be devoted to operational reliability, for other consumer and technical characteristics, important as they are, lose their meaning if the reliability is low. According to an evaluation given by the Politburo of the CPSU Central Committee of the quality and reliability of color television sets, "the leaders of a number of ministries, associations and enterprises, while devoting attention to the quantitative growth of the production of color television sets, have not taken exhaustive measures for improving quality and reliability either of the television sets themselves or of the electronic equipment and materials used in them, which causes justified complaints from the consumers" (Footnote 7). It follows fairly obviously from this evaluation that priority should be given to tasks of improving quality and reliability above all of the television sets themselves as compared to improving the quality and reliability of batching items of the electronics industry, although the latter task is just as important as it ever was.

We need a careful engineering analysis of the quality and reliability of color television sets produced and intended for production as well as the establishment of the real reasons for their insufficiently high quality and their poor reliability. We need the participation in this analysis of the developers and inventors of television sets and batching items of electronic equipment, and also specialists of repair enterprises of the Ministry of Consumer Services. Such an analysis is especially important in connection with the changeover of industry to mass output of televisions of the third and fourth generations. So far, as was already mentioned, their reliability is no greater than that of the first generations. This is happening to no small degree because of the fact that the problem of quality and reliability is somehow "nonengineering" and less significant than other problems having to do with the development of "maximally prestigious color television sets."

So far there have been only individual cases of this kind of analysis, and without the participation of specialists of repair enterprises of the Ministry of Consumer Services and only according to the results of the operation of television sets during the warranty period. Yet abroad firms that manufacture television sets (as, incidentally, other complicated household equipment) devote a very great deal of attention to an analysis of the results of the operation of their items by the consumers and they consider this analysis to be one of the basic ways of improving reliability.

The normative documents in no way envision having the repair enterprises of the Ministry of Consumer Services turn over to the enterprises that manufacture television sets figures concerning post-warranty repair of television sets. This must be changed immediately. Indicators of reliability should be extended not only to the warranty period for the operation of television sets, but to the entire period in which they can be operated after the warranty period.

It is necessary to improve the organizational and methodological interaction among subdivisions of industrial enterprises responsible for reliability and the branch television institute, on the one hand, and other subdivisions, on the other. Workers of subdivisions of enterprises responsible for reliability belonging to the branch television institute are frequently not very familiar with the circuit-design peculiarities of television sets or the technology for their production, and the developers and manufacturers of television sets or batching items of electronic equipment are not very familiar with the real results of the operation of television sets by the consumers or the results of their tests for reliability.

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## POSSIBILITIES OF LEASING INVESTIGATED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 5, May 87 pp 150-151

[Article by P. S. Zakusilov, radio engineer (Novokuznetsk): "Not Trade, But Mass Leasing"]

[Text] What can be done so that televisions always work when they are in the apartment? Change the method of servicing television sets.

The USSR Ministry of the Communications Equipment Industry and other departments with jurisdiction over manufacturing plants must take over repair enterprises (television shops) and put a halt to the sale of television sets through the trade network. Television sets that are produced come into the television repair shops, where they check their quality, eliminate defects that appear during transportation, and take these television sets and put them on the books of their own enterprise. Television repair shops are becoming a "service organization."

If a resident of a city or village needs a television set he places an order with his "service" and they bring to his home a television set of the necessary brand and they install it professionally, but the television viewer must pay for the operation of the television set through the savings bank along with his apartment rent. And if the television set breaks down the owner notifies the dispatcher and they bring him a television set of the same brand or one of equal value to replace it, and the malfunctioning one goes in for repair to the shop. And if there has been a delay, the television viewer does not pay for this time. The television set that is repaired in the shop will be installed for another television viewer upon order. And if the television set is completely worn out, the service writes it off from its book and turns it over, for example, to Pioneer clubs and so forth, and in order to make up for it they order the necessary quantity of television sets from the manufacturing plant.

Because the service is well aware of the television equipment it has at its disposal it can more efficiently plan the repair and orders for small parts. It becomes an industrial enterprise will all the advantages in labor organization that ensue from that: here it is possible to apply the most

modern technology and the brigade system, and to introduce the conveyor method of repair.

The state receives great economic advantages from this kind of reorganization. If it is now difficult to determine the quantity of television sets in operation that need repair, it is even more difficult to determine how many new television sets to produce. The irregularity of the production of television sets causes an immense amount of harm to the country's economy. Through the service it will be possible to know exactly: how many television sets are in operation, how many require repair, how many must be replaced with new ones, how many spare parts and what kinds are needed, and so forth. In the ministries and at the enterprises engaged in the output of new television sets the planning will not be from the level achieved but from the demands of the service center enterprises themselves.

But what will the television viewer gain from all this? He will have a television set in his apartment that is always in good repair and he will be free of many concerns and unexpected periodic expenditures which appear during the time of the repair of television sets, and he will also be free of concerns that arise when turning in an old set and buying a new one.

Understandably, it would be impossible to change over to such a system in one month, a day, or even a year: so far there are an immense number of television sets that are privately owned. The changeover can be made gradually. Initially the repair enterprises should be under the jurisdiction of the manufacturer and all the equipment that is produced will gradually be turned over to these enterprises and it will be used only according to the leasing method, and the leasing will be offered to those who have brought in their own television sets for repair. As their individual television sets become outdated and worn out it will be possible to change over to leasing.

People might object that leasing of television sets is already done in consumer services and there is no need to start another service of the same kind. But the existing leasing is too small in scale and too "barren." They give them out, they take them back.... The defective ones are taken to the same repair shop. The kind of leasing we suppose will be mass leasing, its cost will be low, and it will be advantageous to the consumers.

There is a lot of equipment in every apartment: electric and gas ranges, a washing machine, a tape recorder. But the most complicated is undoubtedly the television set. And it will become even more complicated: we now have video cassettes, video tape recorders, and television games. Tomorrow the television viewer will be able to use this equipment to obtain information from libraries, and day after tomorrow.... It will be difficult for him to

live if the equipment breaks down. He needs a set that is in good repair every day. To count on having such a complicated instrument never break down is to wish for Utopia. But to arrange things so that even if this does happen the consumer will experience no inconvenience--this is possible!

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## SIBERIAN ECONOMISTS VISIT CUBA

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 5, May 87 pp 152-160

[Article by S. A. Berezin, candidate of physico-mathematical sciences, B. L. Lavrovskiy, and A. M. Pozdnyakov, candidates of economic sciences, Institute of Economics and Organization of Industrial Production of the Siberian Branch of the USSR Academy of Sciences (Novosibirsk): "Siberians in Cuba"]

[Text] We three Siberian economists spent a total of more than 2 years in Cuba: from December 1982 through May 1985. For the first time in the history of the two academies--of Cuba and the USSR--joint work was done for compiling a comprehensive prognosis of the socioeconomic development of one of the regions of the country, namely the special municipality of the Isle of Youth. We participated in this work in conjunction with specialists from other Soviet organizations under the general leadership of the Institute of Latin America of the USSR Academy of Sciences. The work was given a positive evaluation by Cuban leaders and will serve as a reference point in preplanning research and planning calculations.

Economic science in Cuba is experiencing a period of establishment. The need for accelerated development of the country brought about the organization of a ramified network of planning agencies in the republic: the Gosplan, the planning divisions in the ministries, provinces, municipalities and enterprises. There are two scientific research institutes functioning under the Gosplan, whose task it is, in addition to improving methods of planning and management, to conduct research on the development and distribution of productive forces, preplanning developments, the drawing up of target programs, and so forth. The work done by the institutes is of an applied nature, and in order to increase its effectiveness in recent years a great deal of attention has been devoted to the development of the Academy of Sciences. Thus in 1984 they formed the Institute of Mathematics, Cybernetics and Computer Methods, one of the leading positions in which was occupied by the Division of Economic Cybernetics (in 1986 it became a part of the new institute: Cybernetics, Mathematics and Physics. Work was activated for investigating social and socioeconomic problems in the Division of Psychology of the Institute of Social Sciences. The territorial aspects of planning are being developed in the Institute of Geography and the Institute of Physical Planning of the Gosplan.

The Cuban Academy of Sciences is experiencing a critical shortage of scientific personnel, which makes it impossible to create scientific research institutes of an economic profile in the republic, although there is a decision to organize one. The CEMA countries and above all the USSR are rendering a good deal of assistance to Cuba in the training and scientific growth of personnel. Almost one-third of the associates of the Division of Economic Cybernetics have received a higher education in the USSR and an equal number have taken scientific job training here. We worked with Cubans in all of our work--they were graduates of Soviet VUZes and it was with them that we could most easily find a common language both in the literal and the figurative sense. The goal-directed work for providing for growth of the scientific potential of specialists was reflected in a number of basic research projects on problems of improving methods of planning on the basis of the utilization of mathematical apparatus. This is actually what enabled the Cuban Academy of Sciences to begin the development of programs for the socioeconomic development of the Isle of Youth.

On the Soviet side the group for drawing up the comprehensive prognosis included specialists in agrochemistry, agriculture, forestry and economics. The tasks of the latter included consultation and direct participation in the formation of the concept of development, the construction of the mathematical apparatus, and the adjustment and realization and practical calculations of the model complex as well as an analysis of variants of the development in the future.

In order to formulate the concept, it was necessary to study the condition and effectiveness of the utilization of natural resources of the island, and the possibilities of increasing them in the future. The answers to many questions were provided by the research of agronomists, agrochemists, and foresters. As concerns the development of the economic prognosis, the work on this required special knowledge not only in mathematical modeling, but also in regional planning, presupposing a certain level of preparation in concrete economics.

The Institute of Economics and Organization of Industrial Production of the Siberian Branch of the USSR Academy of Sciences has been engaged for many years in research on problems of regional planning utilizing mathematical models. The methodology of regional planning developed there is widely known in the country and abroad, which predetermined the Siberians' trip to Cuba.

The majority of the Soviet specialists live in Havana (where 20 percent of the Cuban population also live), but many of them are also settling in other regions of the country. For example, we lived on the seashore in the village of Alamar (10 kilometers from the center of Havana). Life in Alamar began early in the morning. At 7 schoolchildren in grades 4-10 were already in their buses traveling to the Soviet school at the embassy, which was located in Havana in the picturesque building of a former monastery; an hour later, the schoolchildren of the primary grades left (their school is located closer by). Along with the schoolchildren buses and automobiles carrying Soviet specialists departed in various directions (taking them to and from work was stipulated in the contract).



We were surprised by the organization of the payment for traveling in public urban transportation. In Cuba the majority of passenger transportation is done in buses. At the final stops one can frequently see two lines: one that guarantees a seat and one that gives the right to enter the bus. The seating is done only after going through the front door, next to which is a massive metal coin receptacle. When entering the passenger puts a 5-centavo coin into the receptacle (approximately 5 kopecks). When it drops it gives a unique ring and the driver knows that the trip is paid for. If it does not ring, the driver quickly exposes the "scoundrel." On interurban buses, there are the kind of conductors we are used to, who sell standard tickets.

When seating the passengers from the line for seating the driver checks to make sure the room is full. As soon as all the places are taken he closes the door, and takes the bus to the line of people who have only the right to enter. There are no lines for seating in the intermediate stops, but there the passengers enter the bus only through the front door, with a coin in their hands.

We would arrive in the center of Havana at the Cuban Academy of Sciences, which is located in the building of Capitolia--an exact copy of the Roman one. But the subject of our scientific interest, as was already mentioned, was the Isle of Youth, which is located approximately 90 kilometers from the southern coast of Cuba. We had to fly there on aircraft of the Cuban airline Cubana on business trips. The island was discovered by Christopher Columbus in 1494 and since that time it has had a multitude of names, and the last time it was changed was in 1979 when it was changed from Pinos (Pines) to Juventud in honor of the great contribution of the young people ("juventud" is Spanish for youthfulness or youth) in transforming this previously backward region of the country. One indicator of the island's rapid development might be the "explosive" growth of the population: in 1960 about 11,000 residents lived here, in 1970--30,000, and in 1980--60,000. Let us note that the last figure shows only the number of permanent residents. In addition to them, in 1980 about 5,000 temporary workers and more than 20,000 schoolchildren lived on the island--the schoolchildren were studying in the so-called "Schools of the Field"--these educational institutions will be discussed below. This structure of the population is a specific feature of precisely this region.

A couple of words about the administrative division of the country. Cuba, whose population is about 10 million, has 15 provinces, and the largest one--the city of Havana--has about 2 million residents, while the smallest one--the province of Siego de Avila--has about 330,000. All the provinces are broken down into municipalities, but there is one special municipality under central jurisdiction, that is, it has the rights of a province--this is the Isle of Youth. The center of the municipality is the city of Hueva Jerona, where approximately half of the island's permanent population lives.

The basis of the island's economy is citrus growing. The climatic conditions here are such that the ripening of grapefruit takes place 3 weeks earlier than in other regions that engage in raising them, including abroad. This peculiarity has also served as a basis for the orientation toward raising grapefruits for additional currency revenues from exports. The cultivation of the citrus groves was the orientation point for the construction of water

reservoirs and roads and the creation of the broad network of the "schools in the fields" which were already mentioned. Here the students combine education with daily work on the plantations. This form of education extends throughout all of Cuba. The students of the "schools in the fields" (these are students of schools of the second level--from grades 7 through 9 and the so-called pre-university students--grades 10 through 12--are on complete state support (clothing, food, textbooks and so forth)). Every day they spent 3-4 hours working on the plantations and the rest of the time they spend in classes, cultural and sports measures, and so forth. It is interesting that on the Isle of Youth not only Cubans study in such schools, but also children from Nicaragua and certain African countries who, in the opinion of Cuban leaders, are going through a "school of socialism." At the beginning of January, when the traditional celebration of the harvest takes place in Nueva Jerona, these boys and girls, dressed in national costumes, dance along with everyone else, adding a special color to a crowd of local residents who are colorful anyway --the "pinero" as they are called in Cuba.

The pineros--residents of the Isle of Pines--are descendants of representatives of various races and nationalities: the Spanish-speaking immigrants from the Canary Islands and the Iberian Peninsula; Chinese contracted at one time for work on the sugar plantations; English-speaking blacks from the island of Greater Cayman, and also Japanese, Mexican Indians, Greeks and Poles. Moreover, the fact that the Isle of Youth during the past 15-20 years has been a territory of rapid assimilation has brought a large influx of migrants, especially from the eastern provinces, which has left its stamp on the cultural image of the local residents. The reverse flow--migrants from the island--is also fairly strong. In this respect as in certain others the Isle of Youth reminds us of our Siberia, the more so since in the middle of the last century it was a place of exile and imprisonment, and during the 1920's and 1930's they dealt here according to an American plan a "model jail" in which, in particular, F. Castro and other participants in the heroic storming of the barracks of Moncada served their terms.

For us, who had come to the island from the real Siberia, much seemed wild and unusual, of course, above all--nature. The Cubans joke that in the USSR the year consists of two winters--one white and one green. But in Cuba there are two summers--one wet and the other dry. And the wet summer comes during the summer months and therefore it is called simply "summer"; the dry summer is called "winter" and its average temperature is a little lower, and therefore we liked it better.

Even during the hottest period in a crowd of Cubans one can encounter people who are sneezing, blowing their nose and coughing, and their virus cold illnesses are not seasonal, as they are for us, they are simply one of the features of their existence. One must say that the Cubans have a right to be proud of their public health; they have been victorious over many diseases that are typical of the tropics and in many respects their medicine has reached the world level. Fortunately, we had almost no occasion to take advantage of the services of medical personnel, although certain unpleasant surprises await those newcomers who ignore elementary safety precautions. For example, the bottom of the ocean in the region of Alama, where we lived, is literally covered with sea urchins and therefore it was necessary to swim

wearing rubber thongs or tennis shoes, in order not to "pierce" your foot with a long (up to 10cm) needle which cannot be removed without surgical assistance. In November-December, when the water becomes relatively cool, jellyfish called Portuguese man'o'wars come close to the shore. Their long tentacles contain a paralytic nerve poison and therefore to touch them is unpleasant, to put it lightly. Moreover, both sea and land plants here can also cause an undesirable allergic reaction and therefore the rules "Do not touch, do not smell, do not try" are extremely useful. On the other hand, under the guidance of old residents we did not miss a chance to taste the exotic fruits: mangoes, avocados, fruit bombs and several others. All of these are a seasonal supplement to the Cubans' ration, the basis of which is rice, beans, vegetables and, to a lesser degree, meat, fish, eggs, and milk.

In Cuba for almost all the basic food products there is a card system which guarantees the population an extremely rich selection of products at quite reasonable prices. Moreover, there are two types of markets--free and parallel--on which one can purchase both foodstuffs and industrial goods. As one can see from the title, everyone can buy certain products in the free market (for example, eggs, bread and fish) without any restrictions on the volume. Certain of the rationed goods also appear on the free market, but at prices that are 4-5 times higher (cigarettes, milk, rice). There is also free access to the parallel market, and prices there are 5-10 times higher and high-quality foodstuffs and industrial goods are sold there--delicacies in the broad sense of this word (certain kinds of meat and meat products, liqueurs, frog's legs, high-quality preserved goods, and also shirts, jeans and other fashionable consumer goods which are mainly imported). As the Cuban leadership has repeatedly declared, the country is in position to do away with the card system, but a questionnaire of public opinion shows that the majority are in favor of retaining it.

Of course the existence of a fairly broad network of stores in the country (practically every division has its own store) in which goods that are in short supply are sold for dollars, there are possibilities for speculation in goods and currency, although the incomes of the population are under national control to a certain degree, which is exercised by committees for protection of the revolution (KZR)--the most widespread public organization to which about 6 million Cubans belong. The KZR has taken on a fairly large number of functions, the basic one of which--mobilization of the population to protect revolutionary gains from foreign aggression and domestic counterrevolution--was formulated as early as 1960, during the period of their formation.

The KZR's unite in their ranks representatives of various social and professional strata, and people with various levels of education and political maturity. The committees conduct in the place of residence mass political studies in which every third Cuban participates. There are KZR posts in each region and practically in each large block, and all of their activity is carried out strictly on a public basis. Among the people these committees are called the "vigilant eye of the revolution," but their members certainly do not limit themselves to political, legal protection or educational activity, and they react vigorously to the most diverse problems that arise in this society. For example, recently they have taken responsibility for organizing the collection of secondary raw material throughout the country.

One encounters the work of KZR members at literally every step. One of us who was drawn to photographing the tropical beauty in what turned out to be an inappropriate place was quickly led by polite but persistent KZR members to the appropriate place, and after the circumstances were explained was returned to the "initial point" just as politely and quickly. When reading detective novels of Cuban writers one immediately notices the most specific feature: the investigator who is investigating the circumstances of a crime first of all asks a KZR member who is on duty in the microregion and the simply observant citizens who willingly share whatever they know with anyone--as a result one gathers extremely important, if not key, information.

The Cubans in general are a lively, candid, happy and communicative people. They are not embarrassed to speak loudly, sing, laugh and gesticulate. They smoke strong cigarettes without filters (the somewhat more important people smoke cigars) everywhere, including in drug stores and libraries, and the women smoke even more than the men do. On the streets there are many stands where everyone can drink a 30-gram portion of strong, sweet black coffee (which must be filtered through a gauze filter) as a pick-me-up which is so necessary in the everyday hustle and bustle. One frequently sees bars in which they serve alcohol--also in mini-portions and without any appetizer--but there are no drunks on the streets and the language does not include the concept of a "drunk tank." Cool drinks and beer are sold only on ice--in any cafe, bar, cafeteria and so forth--and if, for example, you have a sore throat you must wait a while so the drink can be heated up.

Another indispensable feature of Cuban life is ice cream. It is sold in special cafes, all of which have the same name, Copelia, or is simply sold on the street. There are many kinds of ice cream and it is fairly expensive (approximately 50 kopecks a portion) but it is always very good--from simple vanilla to exotic orange with pineapple. Cuba does not have mineral water as we understand it, but everywhere one can see carts with people selling "granisado"--crushed ice with fruit syrup, which is served in multipurpose cardboard cups. The people who sell "granisado," like other small retailers, as a rule are men, like those who sell newspapers, who walk the streets of Havana from early morning and offer their commodities (frequently with stupendous enunciation)--from the most popular GRANMA to the local HAVANA TRIBUNE.

Cuban television left an extremely sharp impression. The information is given in the form of a lively discussion, which is not forced or constrained. The speakers are not afraid of making mistakes or slips of the tongue and they frequently make jokes about themselves. The cameramen are not afraid to show the television "kitchen"--a frequently used live broadcast, which contributes to immediacy and efficiency, and the television viewer gets the feeling of participating in the event that is being reported. They talk less and show more on the television screen. The information programs must alternate with musical numbers--for relaxation.

The motto of the Cuban press is efficiency, which makes it possible with a small number of printed editions still to satisfy the hunger for information. The newspapers write about everything, but there is a clear prevalence of

material about Latin America. Correspondence about the "rest of the world" is selected from the standpoint of interesting the Cuban reader. Once a week there is a "thick" newspaper, OPINA (like our NEDEL'YA) that has a diverting recreational slant. Here one can find out the latest news from the world of science and art, read culinary and other recipes, and discuss the fashion news. This publication regularly conducts various questionnaires of the readers and in particular it determines the most popular performers, both domestic and foreign. From the results of this ranking at the end of each month they formulate the repertoire of a 2-hour television concert of stars, and at the end of the year they give the final show.

Generally speaking, and this pertains to various kinds of activity, the Cubans are very receptive to foreign experience and study it with interest from the standpoint of the most rapid application of it to Cuban reality. This explains, in particular, the fact that in addition to scientific activity the members of our group had to work a great deal in the field of education: we gave lectures, conducted seminars, gave consultations and so forth. Contacts with Cuban scientists and production workers arranged on this basis were informal, which, of course, was to our advantage. In addition to achieving practical goals, the work on the programs for the socioeconomic development of the Isle of Youth made it possible to include the authority of academic science in the directive agencies of the republic and expand the scientific horizons of specialists who participated in its development. It also strengthened Soviet-Cuban scientific ties. A confirmation of this is the Plan for Cooperation During 1986-1990 Between the Cuban and USSR Academies of Sciences for Investigating Problems of Territorial Planning.

The Institute of Economics and Organization of Industrial Production of the Siberian Branch of the USSR Academy of Sciences is responsible on this plane for the theme "Development of Mathematical Models for Territorial Planning." Our Cuban partner will be the Institute of Cybernetics, Mathematics and Physics.

In October 1986 a scientific delegation of the Institute of Economics and Organization of Industrial Production traveled to Cuba. It set the conditions and forms for cooperation and in conjunction with the Cuban scholars it drew up the working plan. Its theoretical sections were reinforced by practical calculations of the economic development of one of the provinces of the republic--Matanzas. This will make it possible to generalize the joint research in the form of methodological materials and to recommend them for extensive utilization in scientific and planning work.

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## WEST EUROPEAN ORGANIZATION COORDINATES RESEARCH

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[Article by A. L. Fedotova, candidate of economic sciences, Institute of Economics of the World Socialist System of the USSR Academy of Sciences (Moscow): "On the West European Plan Eureka"]

[Text] In 1985 France suggested to the West European countries that they organize a cooperation in the area of the latest technology. Thus appeared the plan called Eureka (Footnote 1), which was intended to mobilize the scientific and technical forces of Western Europe for five "concrete goals and programs" in the areas of information science, long-distance communications, robot equipment, biotechnology, and new materials.

In June of 1985 representatives of 17 countries participated in the first international conference of participating countries in Paris (in addition to the 12 EEC countries there were Norway, Switzerland, Austria, Sweden, and Finland). Another participant in the conference was the chairman of the Commission of the European Community (CEC), and also representatives of the largest French companies. A consulting group was formed whose goal was to have been to look for ways of cooperating that are acceptable to at least two of the main countries that which to participate in the plan.

The second intergovernmental conference on the Eureka plan was held in November 1985 in Hanover (FRG). Ministers of foreign affairs and scientific research of 18 states (17 participating in the previous meeting plus Turkey) and representatives of the CEC participated in it. The declaration of the principles of technological cooperation within the framework of the plan was adopted and agreement was reached concerning 10 concrete plans for cooperation in the area of advanced technology valued at an overall total of 2.7 billion French francs, and this joined together 12 of the 18 countries participating in Eureka.

The third intergovernmental conference on the Eureka program took place in London from 30 June through 1 July 1986. It ended with a discussion on organizational issues and actually laid the basis for the research program. An international secretariat--the operational working staff of Eureka--was created and 62 new plans for cooperation were approved for a sum of 2 billion

European currency units--(13.5 billion French francs). The plans were linked to research in the area of electronics, transportation, medicine, agriculture, the organization of industrial production, robot equipment and so forth. The time periods for realizing the agreements are from 2 to 10 years. Iceland was accepted as a new member of Eureka in London.

#### Eureka's Goals

In approximately a half-year the plan has been changed from an idea to a completely realistic program. The speed with which the parties began to implement the plan shows the crucial nature of the problems and tasks raised by Eureka, and not only for Western Europe, but for the entire world community.

Today the science-intensive branches have become the main motive forces of industrial development in the various countries. Science-intensive products have become a significant and an exceptionally dynamic sector of international trade. While during the first postwar years the United States was unquestionably the leader in this area, during the past 10-15 years the high rates of industrial development of Japan and Western Europe have cast doubt upon this.

The competition between the United States and its Japanese and West European competitors is aggravated by the fact that an equalization is taking place in more than just the economic and scientific-technical development of these states. Both Japan and the leading EEC countries are outstripping the United States in the rates of increase in a number of scientists and engineers employed in scientific research and experimental design work. The role of the United States in the sphere of patents and their share in the world exports of licenses are decreasing. More and more frequently Americans lose out to their competitors in terms of the speed of introduction of inventions and to production and the rates of updating of industrial products, and also in terms of a number of the most important indicators of their ability to compete: the innovation of items, their operational characteristics, quality and reliability, and volume of services offered. But all this does not mean that the role of the United States in scientific and technical progress has decreased: the competitors have simply become stronger. Today the industrial and scientific-technical potential of the United States cannot be compared with the potential of their main competitors: they have not taken an unquestionable lead in a single one of the leading areas of scientific and technical progress (Footnote 2).

Yet Western Europe has certain advantages over the United States. These include the solid scientific-technical and production traditions in individual branches of production; the high scientific level of number of large national research collectives that have been in existence for a long time; the unique nature of certain specialized national companies and enterprises which provide them with a monopoly on the market for certain products; the tendency that has been earmarked to solve large scientific-technical and production problems through the collective efforts of a number of states; and the expanding program approach of the European community to the problem of accelerating scientific and technical progress. At present time through the collective

efforts of the West European partners they have achieved a certain amount of success in the aerospace industry, nuclear equipment and technology, microelectronics, computer software, information processing, and comprehensive automation of production. As we can see, the creation of Eureka was a predictable step in the cooperation of the countries of this region.

The impetus to create the West European technological community was, on the one hand, the fact that American medium-range missiles are located on the territory of Western Europe and the United States has plans to militarize outer space and, on the other hand, the fact that Western European countries are behind the United States in such key areas of the current stage of the scientific and technical revolution as microelectronics and biotechnology. In addition to this, certain achievements of Western Europe in world technological exchange make it possible for it to attempt to break away from strict American control in this area of international relations and try to achieve relative independence.

The solidarity of the European states within the framework of the plan is also promoted by the U.S. technological policy which has clearly gone too far in its relations with its capitalist partners. This includes pressure on their allies in order to force them to participate in the strategic defense initiative as subcontractors (and, in the opinion of Western specialists, the subcontract will be several levels below their real technical capabilities). There is also the attempt to draw the brainpower into the United States and severely isolate the partners from the most advanced technology under the pretext of its having military significance. There is also the desire on the part of Americans to impose their will not only in the technological exchange between the East and West, but also in principle to control or simply to take into their own hands the world technological exchange.

The main goal of Eureka is to create the European technological community (ETC) which, as it was formulated in the Declaration, is called upon "through the most intensive cooperation between enterprises and scientific research institutes in the area of advanced technology, to increase the productivity and the ability to compete of branches of industry and economics of Europe on the world market and thus to consolidate the basis for stable well-being and employment." The plans adopted within the framework of Eureka should contribute to creating a market of "highly technical" products on the world scale. In order to compete effectively with the United States and Japan, Europe must stop repeating their scientific research and development which has been conducted in dozens of countries and tried to concentrate their resources in the key areas of economic growth on a transnational basis.

#### Plans

It was intended for Eureka to be constructed around concrete plans. They are being carried out by special groups that are operating according to the principle of an industrial contract and bear complete responsibility for their implementation. The plans should provide for the development of modern technologies that are of great economic or strategic significance and they are to lead to the creation of some product that has new original characteristics and an outlet to the market in applied areas. Many partners should



participate in the plans (industrial companies and state institutions),<sup>1</sup> which will also provide most of the financing. This cooperation envisions the participation of a number of European countries, since their implementation requires combined knowledge and competence, joint utilization of resources, and the creation of a unified front at the level of applied areas, and so forth.

It is thought that the soil was prepared for Eureka by the Esprit (European Strategic Program of Scientific Research and Development in the Area of Information) program, which made it possible for the firms to conduct joint research in the stage that preceded competition and also a number of other international agreements (Footnote 3).

The conference in the FRG determined the Basic Directions for the activity within the framework of the ETC: the creation of information and communications equipment, new materials, technological processes, biotechnology, laser and maritime equipment, robot equipment, and also various kinds of technology related to environmental protection. Additionally, the conference adopted 10 concrete plans whose goals were to create: unified Western European standards for microcomputers (the participants were England, France and Italy); a vector minicalculator (France, Norway); a powerful laser system for industrial purposes--"Eurolaser" (FRG, France, Italy, Great Britain); robots for the textile industry (France, Portugal); the production of "amorphous" silicon (France, FRG); the production of special membranes for filtration of sea and waste waters (France, Denmark); a system of "indicators" for discovering pollutants in the troposphere above Europe--"Eurotrack" (FRG, Austria, Finland, the Netherlands, Norway and the EEC); the "European research network" (FRG, Austria, Finland, France, Holland, Sweden, Switzerland, and the EEC); a flexible automated production system using optic fibers and lasers (France, Italy); and a diagnostic test for venereal diseases using monoclonal antibodies (England and Spain). Almost all of the plans named, in addition to the participants, the states that had expressed interest and that, if possible, would participate in their implementation.

It is emphasized in the communique of the conference that the "programs under the Eureka plan do not replace the existing cooperation in Europe in the area of technology or its further development but, insofar as is possible, should be based on it or augment it. This pertains to programs of European communities and international organizations such as the European Space Agency and the European Organization for Nuclear Research, plans for bilateral and multilateral cooperation, including in the area of theoretical research and research in higher educational institutions and the initiative of the European Council and the European Fund for Contributing to Theoretical Research."

Here are some of the 62 plans adopted in London: "Eurosime"--the creation of a plant with a flexible automated production system for electronic charts (France, Spain); "Serviz"--the creation of a Western European Center for Synthesis of Depictions in order to perfect the technology of depiction (France, Luxembourg); "ES-2"--the development and introduction of a process of producing integrated circuits on the basis of direct embossing on silicon (Belgium, France, the FRG, England); the development and introduction of a process for producing solid microwave integrated circuits from gallium

arsenide (France, Great Britain); the creation of mobile, rapidly moving robots of the third generation for use in extreme conditions, for example, in fighting against terrorism (France, Spain); the creation of a special "expert" system for eliminating serious malfunctions in production units and control of the safety of production processes (France, Norway); EAST--the development of new technologies for producing software (Denmark, Finland, Sweden, Switzerland, Great Britain); "Paradi"--an automated system for control of production using artificial intelligence (Belgium, France); DIAN--an integrated automated system using neutron bundles for control of the quality of large and complicated components manufactured from new materials (France, Spain); the utilization of powerful lasers for discovering and destroying harmful impurities in prepared items and production wastes (Belgium, France); the development and introduction of a complete set of thyristors for use on rail transportation (France, England); the development and introduction of new technology for tanning hides using aluminum salts instead of chromium salts (Austria, Greece, Spain); "GALENO"-2000--the creation and production of automatic medical diagnostic equipment based on sensors and artificial intelligence (Denmark, Spain); the development of a new method of automatic determination of the sources of noise in means of transportation (Belgium, FRG); "APEX"--the creation of a Western European center for exchanging information pertaining to the aerospace industry (France, Italy); the development of technology for producing components and parts for automobile engines made of new materials (France, Italy). Of the 62 plans adopted for implementation French firms are participating in 40 of them, English--in 29, and firms from the FRG--15-16.

#### Organization, Structure and Participants

The central coordinating agency for Eureka is the European Intergovernmental Conference which convenes twice a year. It relies on the work of a group of experts (one from each country). The executive agency of the conference is the international secretariat. Its staff will include seven specialists who are professionals, including the leader, and six technical associates. The tasks of the secretariat include: disseminating among countries participating in Eureka information related to the implementation of the earmarked plans; creating a databank for all work necessary to the program; coordinating all major issues with highly placed representatives of the member countries; rendering assistance and support to private enterprises and research institutes in obtaining all the necessary organizational and technical information; and contributing to conducting meetings within the framework of the Eureka program. The French diplomat K. Fels was appointed as the first leader of the secretariat.

The fact that there will be no intergovernmental agencies supervising Eureka contributes to the most rapid implementation of its plans. It is enough for industrial companies to gain the agreement of their governments in order to include in the plan any technical program that falls within the basic areas of the ETS and obtain access to state allocations. Industrial workers were quick to understand the advantages that could be gained from Eureka: on the one hand--its scale, and on the other hand--the speed of implementation of the plans. Both aspects enable them to efficiently enter the world market with the most advanced products.

Western European entrepreneurs were especially approving of the "mobile model of economic cooperation" which makes it possible to flexibly adapt Eureka plans to their own strategy. Its absence consists in that the preparation of individual plans should take place with intensive cooperation from companies, credit institutions and potential consumers of the products, and they should discuss the forms of cooperation and management with the interested partners as well as reveal the possibilities of financing the plan. Within the framework of the "mobile model" they determine the forms of cooperation on the part of the state and the community can study the possibilities of obtaining state orders or financial support for especially promising plans. State control over the contribution of individual plans to the principles of Eureka can be limited.

The participating countries are discussing the role of the Commission of the European Community in the Plan. It is noted that Eureka made it possible to take the cooperation of Western Europe beyond the borders of the EEC and it became possible to get around the "double duty bureaucratism" of the EEC, which was the reason for many years of delay in implementing a multitude of plans within the framework of the common market. At the same time it seems that it would be useful to enlist the EEC with its finances and specialists as a participant in Eureka for solving certain problems.

#### Financing

From the very beginning it was obvious to all countries participating in Eureka that the firms would participate in the most advanced and risky programs only if they had support from the state, mainly financial support. From the first steps the question of financing evoked deep differences of opinion among participants in the plan. While the French were in favor of state financing of Eureka, the Germans were in favor of mixed financing with a predominance of private capital which state funds were to "rationally augment," and the English were in favor of completely refusing the latter.

In September 1985 after long fluctuations the FRG government announced its intention of financing the plan. According to the press, the chancellor Helmut Kohl announced that his country would offer 1 billion marks (approximately 384.5 American dollars), including 50 million marks from the 1986 state budget. In October 1985 there was an announcement that the FRG government had changed its decision regarding the sum allotted for implementing the plan in the direction of reduction--to 40 million marks. The French government initially intended to allot 20 billion francs for research within the framework of Eureka and then the sum was changed somewhat: for 1986 --1 billion francs (113.6 million American dollars), and for the next 5 years --6.25 billion francs. But even in July 1986 they were talking about only 3.4 billion francs over 5 years. The overall sum of French participation in Eureka is estimated at 14 billion francs. The English position also underwent a marked change between the first two intergovernmental meetings. In Hanover representatives of Great Britain had already agreed that the governments would play a direct role in the financing of specific plans.

According to data for the end of June 1986, special funds for the needs of Eureka were created by four countries: France (for 1986--7 million francs, for 1987--1 billion and for 1988--1.2 billion francs); Norway (for 1986--20 million krona), Portugal (for 1986--\$1 million) and Holland (for 1986--30 million gulden). The governments of the majority of the other countries limited themselves to assurances that financial assistance would be offered to private firms, if necessary, within the limits of the states' budget capabilities.

In keeping with the declaration, enterprises and scientific research institutes participating in any of the Eureka plans financed this project from their own internal funds or by resorting to the services of the long-term capital market. When necessary they can also enlist for this purpose state funds that are placed at their disposal. Eureka receives "reliable support" from the participating countries and also from the European communities.

The policy determined within the framework of Eureka and above all its financial levers are intended to provide budget-financial privileges to firms that are cooperating with the companies of other countries that are members of the European Technological Community. A key stage in this policy might be the release of the colossal purchasing capabilities of gigantic European municipal service companies for acquiring products of these new European countries instead of buying from their own domestic suppliers.

#### The Participation of Third Countries

One of the important aspects discussed at the second intergovernmental conference was the question of the participation of third countries in the Eureka plan. In the declaration of the meeting it is pointed out that the plans implemented within the Eureka framework should remain open to other partners if the participating parties wish this.

Thus government figures of the participating countries allow the possibility of participation of American or Japanese companies in the plan. But then it is stipulated: "If it is possible to obtain a guarantee that the Europeans will not be deprived of the right to make decisions...." (Footnote 4) Now during the period of Eureka's establishment the West European states are trying not to allow North American countries and Japan to participate in its programs since then there would be a real threat of the dominance of the gigantic American and Japanese corporations in the ETC.

It was emphasized at the conference in Hanover that only "through consistent and goal-directed cooperation will Europe be able to exist successfully on the long-range plane in the triangle of forces with the United States and Japan." (Footnote 5)

As concerns cooperation with socialist countries within the framework of the plan, the Ministry of Foreign Affairs of the FRG announced at a press conference in Hanover on 5 November 1985 that it was possible but only in certain projects. Here it was necessary to observe the condition that the cooperation would not affect the interests of security of the West. In the opinion of the French minister for questions of scientific research and

technology, Hugh Curien, there is nothing to stop third countries from participating in Eureka plans in individual cases as long as this leads to an improvement of the plan. Thus in principle the participation of socialist countries in Eureka is possible, although there was no particular enthusiasm when this question was discussed.

The London intergovernmental meeting was a demonstration of the current differentiated approach on the part of countries belonging to Eureka with respect to cooperation with third countries. Iceland and Yugoslavia submitted official requests to enter the organization. In spite of the fluctuations of the ministers regarding the question of Iceland's real contribution to Eureka, it was unanimously accepted. The admission of Iceland was called justified and logical, since it is a member of the European Free Trade Association--an organization that was officially invited to participate in the West European program on either a collective or an individual basis. As concerns Yugoslavia, which has a bilateral agreement with the EEC concerning scientific and technical cooperation (which envisions, in particular, exchange of scientific information and the participation of Yugoslavian scientists in the scientific and technical programs of the EEC), a decisive role in rejecting its candidacy was played by pressure from the United States on the West European partners.

The traditional grounds were used: the desire of the Americans not to allow the transfer of modern "strategic" technology to the socialist countries. The British Secretary of State for Trade and Industry, Paul Channon, at a press conference concerning the London meeting announced that participants in Eureka did not intend to violate the list of goods for export to the socialist countries established by the Coordinating Committee for Control over exports to socialist countries (COCOM).

But if one takes into account that far from all of the 72 plans of Eureka can be considered "strategic" no matter how hard one tries, the justification for rejecting Yugoslavia can hardly be taken seriously. The United States is constantly taking advantage of all the means at its disposal to try to undermine any cooperation between the East and West, in trying not to allow normalization of the international situation and to deprive its partner-competitors of the possibilities of gaining new markets where, because of traditional relations with socialist countries, they feel more confident than Americans do.

#### Problems and Difficulties

In spite of the concrete results achieved during the course of the intergovernmental conferences, the viability of Eureka depends on how well they succeed in overcoming the following factors that impede it:

problems of financing that are difficult to resolve;

the lack of a unified West European market and an uncoordinated structure of a large part of industry which is oriented toward national demand, which impedes the utilization of technological resources and reduces the effectiveness of their utilization in world markets;

U.S. opposition to the intended independence of Europe and the formation of research developments within the framework of the American plan which competes with Eureka;

the old intra-European contradictions, national interests, intraparty conflicts and the lack of clarity regarding the participation of Western Europe and its role in the SDI;

the doubts on the part of neutral countries concerning the role they are assigned by EEC countries in Eureka and the fears that their participation will be more political than economic in nature.

So far, in the opinion of economists, only the three basic premises of Eureka have a chance to survive the intra-European disputes which will flare up as the plan matures: scientific research within the framework of Eureka will be distinguished mainly by its civic direction; scientific research and experimental design work will be coordinated on a European scale; European firms participating in Eureka will not be prohibited from participating in plans of the United States.

The Attitude of Countries Participating in Eureka Towards the "Strategic Defense Initiative" of the United States

It is quite obvious that for the economic and political interests of the United States an independent Europe represents an extremely undesirable element in international relations. Hence any attempt on the part of West Europeans to achieve any independence from the Americans in solving practically all problems of international relations encounter overt and covert opposition from the United States. This pertains also to the Eureka program in its initially conceived independent non-American variant.

From the first steps of Eureka the Americans have tried to turn it into an appendage of the SDI. The pressure of business circles of individual West European countries, that have already restricted themselves to the SDI through contracts, on their own governments helped the United States in combination with its own pressure on its NATO partners, to achieve approval of the "Strategic Defense Initiative" at the state level, thus implicating Western Europe more and more deeply and the U.S. plans.

Against the background of the fluctuation of the governments of countries participating in Eureka, when a number of the most important problems are being solved, above all financial ones, the "Star Wars" program has looked much more impressive and clear-cut. The rough figures for the implementation of the SDI and Eureka for a 5-year period amount to \$26-27 billion and \$6.3 billion, respectively (Footnote 6).

The lack of unity in Europe and also the lack of clear-cut agreements concerning financing of this Eureka program impede its implementation and make it possible for the United States to include in the plan the producers and developers of the latest technical equipment and technology which the United States needs. When appealing to West Europeans to participate in the SDI, the

Americans consistently follow a course toward a worsening of the world political climate which, in turn, gives justification for the U.S. military and industrial complex to insist on increasing government military allocations.

Involving financial means, scientific potential and qualified personnel of Western Europe, which could be used in Eureka, in secondary developments of the SDI can enable the Americans not only to retard the West European program, but also to retain control over the technical development and exchange in the entire capitalist world.

An objective factor in the development of the world market for "high technology" is the limitedness of national possibilities of any country, even the largest, when it comes to encompassing the entire products list of modern industrial production. The scientific and technical revolution has set for the state tasks which the world community can carry out only through collective efforts.

The priority areas of the current stage of scientific and technical development of the world community are: the application of electronics to the economy; comprehensive automation, including flexible production systems; acceleration of the development of atomic energy; the creation of new materials and technology; and the development of biotechnology. These areas lie at the basis of modern revolutionary changes in science, technology and production, and they determine technical progress not only for the current century, but also for the future. Hence the Basic Directions for Scientific and Technical Developments of the Eureka Program and the CEMA Comprehensive Program, whose development the CEMA Committee for Scientific and Technical Cooperation began as early as 1982, also coincide.

Paying attention to the fact that cooperation with other countries not only increases its effectiveness, but also contributes to detente and a deepening of mutual understanding among nations, the CEMA countries within a framework of the Comprehensive Program for Scientific and Technical Progress up to the Year 2000 have expressed a desire to coordinate their actions, on a basis of equal rights and mutual acceptability, with other interested countries, including within the framework of programs they have adopted for international scientific and technical cooperation. The main thing is for these programs to have a humanitarian peace-loving direction and correspond to the goals of the United Nations.

The CEMA countries are convinced that international scientific and technical cooperation must be global in nature and they are prepared to make a weighty contribution to the development and implementation of a unified program in this area.

#### FOOTNOTES

1. Acronym from European Research Coordinating Agency.
2. Japan and West European companies, for example, control less than 10 percent of the domestic market for electronic equipment in the United

States, and 90 percent of the industrial computers used in Japan and Western Europe were developed by American firms or their affiliates abroad. See A. Bykov and N. Shmelev, "Competition and Cooperation in World Markets for High Technology," MEiMO, No 9, 1986.

3. For example, in the area of batching items for electronic equipment and information science the French concern Matra established an alliance with the Italian company SDE and the Norwegian Norsdata. Tomson did the same thing with the West German, Dutch and British transnational companies, Simmons, Phillips and General Electric. Compagnie General D'Electricite concluded within the framework of the Eureka plan an agreement with 10 European partners in such areas as artificial intelligence, lasers, robot equipment and electronic communications. SNIAS concluded an agreement with Messerschmidt-Bolkov-Blom concerning new products.
4. From an interview with H. Curien, minister for questions of scientific research and technology, in the newspaper LIBERACION, 5 October 1985.
5. From the statements of FRG Federal Chancellor H. Kohl at a conference on 5-6 November 1985.
6. According to calculations of American specialists, in the next 8-10 years expenditures on research within the framework of the SDI alone (before the beginning of the development of systems for basing in space) will exceed \$50 billion, and expenditures on the initial development will amount to no less than 1 trillion. Expenditures on technical service will exceed \$200 billion a year (at the 1986 rate). The overall expenditures on the creation of the "Star Wars" system are estimated at more than \$2 trillion.

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## SCENES FROM DAILY LIFE SATIRIZED

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[Article by Vladimir Bykov: "Little Satires and Vignettes"]

[Text] 1. Mystification

"I shall tell you the most curious story," announced our guest from the capital. "It is easy to talk about it now: a good deal has changed and an active search is going on for new socioeconomic solutions. But the story that I remember occurred about 3 years ago, and involved the names of two fellow doctors of sciences," and he gave two fairly well-known names.

And so, listen.

That year the meteorologists missed something and as a result the immense cargo liner Vostok was quite unexpectedly hit by a strong gale. It was carrying an unusual cargo: exhibits for the international exhibition in Toronto. The cargo was delicate and fragile and the wind force was 9. The ship was smashed to splinters, but even worse, two sailors were lost. The Western press, understandably, began to relish this: unsafe ships, ignorant shore service, a helpless captain, and so forth. The pavilion at the exhibition stood empty, covered with bright colored flags. A scandal!

An interdepartmental commission was created and they began to investigate the situation. They questioned the captain, the dispatchers, the radio operators, the shore meteorologists, and they met with scientists. They called upon the most famous one who was bearded and covered with badges of distinction. On the list of experts he was No 1.

"Dear Pavel Ivanovich! Why are your predictions so imperfect?" they asked him right away.

"Allow me to explain," the bearded one said. "But hear me out and do not interrupt or express surprise. I do not understand why our predictions are ever right.... After all, we study mainly not actual natural processes but diagrams of the Theory of Climate created by the classical scholars more than 100 years ago, and moreover they have been distorted by epigons. If the real

processes in the atmosphere or the ocean are different from those predicted by theory, they are declared nonexistent and eliminated from scientific use. A serious prediction can rely only on an understanding of global phenomena, but they recommend that we do not even compare the dynamics of atmospheric processes in the Eastern and Western hemispheres. The theory asserts that the physics of the atmosphere of the Eastern hemisphere are radically different from the model of the Western hemisphere and any comparisons are undesirable...."

Chairman: "What kind of bull are you handing us? Who prohibits you? This is some kind of nonsense...."

The Bearded One: "I asked you to hear me out to the end. My judgments can be understood only in their entire volume. Restrain yourself: the subject is too important to let impatience to take over from reason. And so, I shall continue.

"The information we have at our disposal is not only incomplete, but also wrong. Thousands of initial measurements are false: the positive temperatures are too high and the negative ones too low. When summing up data, repeated accounting prevails. A number of important parameters are not given to us at all, and without them I am not sure that our activity can be included in the area of science. Most frequently this is a game of words and the issuance of predictions according to the principle 'What do you want'?"

Chairman: "Dear Pavel Ivanovich, explain, finally, who you have in mind when you make such strange reproaches."

The Bearded One: "Allow me. I have in mind not one or two people, and not any specific organization. I am only drawing your esteemed attention to those strange policies which have taken form in our area of knowledge. Here I have gotten to the essence. The time has come to express my deep apologies to all of you present and admit to a little deceit. You addressed me with the words 'Pavel Ivanovich.' Alas, I am Petr Ivanovich. My brother Pavel who, as they say, is the founder of dynamic meteorology, is very ill and stayed home. And I--I beg your forgiveness--am an economist. I decided upon this deception in order to draw your attention to problems of socioeconomic predictions. Since yours is an interdepartmental commission...."

It became noisy in the office, and shouts could be heard: "A disgrace!" "Drive the bearded one out!" "But that is not enough for us...." The chairman frowned and put a stop to the noise. Shaking his head, he noted:

"All this has happened very unexpectedly. Tell us, Petr Ivanovich, what do you want?"

The Bearded One: "A calm business discussion of alternative approaches, unusual concepts, complete information support, a strict procedure for discussions, an unprejudiced attitude toward scientific disagreements, and reporting of global processes with fail. Without all of this our predictions are nonsense. You demand of us an integrated concept of accelerated development. Of whom?... Economists of the international class have died out

because they are unnecessary. But in my perhaps awkward deception wanted to show the absurdity of a prejudiced approach using the example of meteorology, for this is impossible to do using the example of socioeconomic processes: the words have become very familiar, many terms have lost their initial meaning, we do not discuss many things openly enough, and so forth. It is critically necessary for us to overcome all this."

"Who is this 'we'?" one of the members of the commission asked sharply. "We have an emergency--an international scandal and a shipwreck with two deaths. And what do you have? Were you late in starting up a couple of little plants? Did your imported equipment start rotting? Did you add 2 percent onto your report?... We have families who are left without breadwinners! And you make a comedy out of this. You should be ashamed!"

It seemed that that was all there was to it! They had shamed the Bearded One and ground him into a pulp. But he stuck his beard up even higher and said:

"You can see your tragedy with the ship very well because you are removed from it, you look steadily, but from the side. But OUR SHIP you do not see because of a simple reason: all of us, including you, are its passengers. And if you were to delve deeply into its course, its mechanism, and--the main thing--its crew, you might see that emergencies in the most unexpected spheres are beginning to accompany us every day. And we need new high commissions with executive authority. With all respect to you, we need many things. I assume that you agree?"

"So this is where the bearded one is coming from!" the speaker laughed. And you did not know about that incident? Well, provincials....

"Now he himself is on one of the commissions," another speaker noted. "They listened to his opinion so it was probably not in vain that he arranged this spectacle."

"Not in vain, not at all," agreed the guest. And he thoughtfully added: "But that was just the prologue. We are now in the first act. It is interesting, and beneficial. But in any play the main action takes place somewhere other than in the first act...."

## 2. Everything for the Consumer!

The all-union industrial trade exhibit "OUR GOODS DO NOT WEAR OUT" opens tomorrow in Sokolniki. A slender girl in jeans holding a heavy tape recorder on a strap, similar to a child's black coffin, is fluttering around a soft greasy hulk wearing an embroidered skullcap--the chairman of the exhibition committee, Ashot Solomonovich Ivanov. She is getting an interview from him for the newspaper VECHERNIYE NOVOSTI.

VECH. NOV.: "Ashot Solomonovich, what makes your exhibition stand out against the background of many others that are devoted to consumer goods?"

Ashot: "First of all, the goal. It is no accident that we tastefully called it: 'Our Goods Do Not Wear Out.' Folk humor helps to disclose the idea: what

does well-being do? It grows. What does it require? New goods. And here they are in front of you! Your journalists have worn out their pens over the problem of quality. But why bother? Here they are--in reality--goods that are in all ways as good as foreign ones!"

"Yes, there is something to see hear!"

"Where shall we begin, young lady?" Ashot rumbles softly. "Let us start here: women's furs! For winter, Alaruss! Very popular on the foreign market. Mink, muskrat, Siberian polecat, sable, blue fox. A beautiful cut. This one would look especially good on you: a severe style of jacket made of Caucasian lamb's wool with a silk collar. Would you like to go to the fitting room? Yes, we even have a fitting room. The female appetite must be satisfied. They are exciting! They are nice, right? From 4,000 to 12,000 for a fur...."

VECH. NOV.: "But do you not think...."

Ashot: "No, I do not. What must we do? Take the surplus savings away from the citizens. Goods of the highest class will help to solve this problem. They generate pride in our homeland and an unquenchable desire to have them. What does improvement of well-being not have? A limit!"

The tape is whirling around in the recorder. The girl nods as though bewitched and Ashot softly embraces her with his greasy paw and leads her into the depths of the pavilion.

"I invite you to the radioelectronics division," he says in a penetrating voice. "This is a fairy land! What do you have before you? The Buba Music Center. Velvet tones, a modern design, fully automatic. It will compliment any interior--and all for only 4,000. The video tape recorder Dobrynya Nikitich costs the same amount. Incidentally, the cassettes for the Dobryni are the European standard so, just between us, the viewers can do what they wish! They can get films that will make their friends green with envy!"

The stands all around sparkle with nickel and colored plastic.

"Oh, I see, you have your eye on that little number. And no wonder! But that is only for the capital. Incidentally, it is the general focus of one design bureau. It is a startling mixture of ages: a telephone in the 'retro' style with the latest holographic addition, which is called Buduarchik. It is hooked into a special cable network and you can take it wherever you wish. Every morning, what do you get? A hologram: as though it were alive--all the news from throughout the world: who has what, who is with whom, and even what they smell like! From all the fashion salons! While the husband talks on his high frequency set, what is the wife doing? She looks at her Buduarchik. Both of them know absolutely everything! Expensive? What do you mean, child, 7,000 for a piece of equipment like this! This is prestige, the elite!"

"And now come over here, here. You have before you another innovation--a sixth-program automatic learning device called Vovochka. In addition to the Institute of International Relations it guarantees you access to any VUZ in the country. Six thousand, three hundred."

VECH. NOV.: "And does it not seem to you...."

Ashot: "No, it does not seem to me. To go to any of the VUZes, what do you mean!... Now, turn your head over here. A special section called 'Elegant Life.' You can see for yourself--right? A sea of exhibits. I draw your attention to the suite of furniture called 'Sem Luyev': colorful stained glass, bronze accessories, inlaid with natural mother of pearl. And comfort! a bed big enough for three with a secret compartment and a bar for the family friend, a canopy over the alcove, luminescent rugs. A total of 18,990 rubles. Ach, what an alcove, Mama mia!"

VECH. NOV.: "I should like to see the ones for mass purchase...."

Ashot: "I understand. For the mass consumer, in addition to much that I have already listed, the exhibition especially recommends the automotive landau called the 'Capital and Wedding' with the latest tourist trailer; further we have the complex called 'W bok sosedu' and a baby carriage called drykhunchik, with a device to suppress urges to cry and fuss. The carriage costs 670, and the dacha set--5,800, and the 'Capital and Wedding'--9,000. There is a modification of the landau--a quite startling gilded cab called 'Ulybka Abkhazii.' It can be ordered and the retail price is 52,000."

VECH. NOV.: "Still all this seems a little expensive, does it not? I, for example, get 160 rubles...."

Ashot: "My dear girl, but this is not intended for you at all. World standards! They have removed from the exhibition those exhibits that were not successful on a trial sales market. As a rule they are inexpensive, but are they really commodities! A wheelchair for invalids for 500 rubles, a nice stool for 200, a laser foam skimmer for the young housewife for 180, glasses called 'The Dream of the Pensioner' for 100, and some other things. Not expensive.... No, no, our motto is 'Everything for the consumer!' Exhibits such as this must stimulate the demand, not just developing needs, but forming a way of life. That is what you should write in your VECHERNYYE NOVOSTI!

And the magnificent Ashot Solomonovich Ivanov, swaying as he walks, goes about his state affairs, leaving the thin girl in jeans with her heavy black tape recorder, similar to a child's coffin. The electricians are testing the blinding lights. The cleaning ladies are scurrying about.

The exhibition opens tomorrow!

3. And You Know They Are Not Joking!

"Quiet, comrades! The first extraordinary session of untalented managers is declared open. A word of introduction will be given by the former chairman of Mospromplan, Ilya Kuzmich Seryy.

Seryy's appearance is met with various troubles and a restrained hum of voices. Seryy's foxy face with his shaggy head of hair began to sway over the podium on its thin neck, just like grass in the wind.

"This is a business meeting, we have no time for explanations!" the speaker blurted out. "There will be no report, we shall exchange thoughts. And I was instructed to sketch the contours of our problems. Are there any objections?"

The hall is silent.

"We have begun a great work!" Seryy raised a finger. "There is a state talent search. This, incidentally, is the first in history. And us," the speaker giggled, "us, of course, they do not call talented and therefore we have gathered at this meeting and therefore we are called, 'untalented....' We must understand how crucial the moment is. Certain comrades think: everything will pass, there has never been anything like this! Well, they will take us from one position and offer us another...."

He fell silent and everyone saw how a cunning, kind-hearted smile slipped from his lips, his shaggy brows came together, he just barely raised his upper lip and bared his small sharp canine teeth. The fox had become a wolf. This was terrible.

"It will not turn out all right!" he said sharply. "They will not offer us new jobs! Therefore let us imagine. As I understand it, it is necessary to turn our imagination in two directions. The first is strengthening our own authority and the second has to do with these talents themselves. Well, authority is something we know about, we have been familiar with it for many years. Many have been in charge for 20-30 years and have had nothing but losses but they are firmly ensconced at the feed troughs. But without talent you will not stay there," the speaker noted kindly and a kind smile again slipped from his sharp little face. "Who has reinforced his authority and how--it would be useful to discuss this today. And it would not hurt to listen to science. We have prepared a couple of announcements for you. One has to do with statistical reporting: there are tricks but not everybody knows, and they are very appropriate in restructuring," he giggled, "and the other one has to do with the fine points of the psychology of communication along the vertical. When they have become nasty, you understand, you are not able to hit the right spot or lick the right boots.... In general the first direction is understandable: methods and devices of self-assertion. So that in the upper echelons there will be no thought of replacing it. Everyone says that all your work is bad, but now it is being restructured. Clear?"

Throughout the hall one could hear restrained but friendly applause. Still Seryy was the head!

"Now about the second area--talent. There is no need to panic here either. In the code of labor there is nothing about talent or the lack of it. And all customs and traditions are on our side. And remember: character is more important than talent. But if you have talent it will be of immense advantage to you. Therefore in the discussions I wish to hear about your development of talents. They must be polished up: hand over a bribe and jump, hand over a bribe and jump. That is what certification is for. Right? And those who have character will shout everywhere that you are not able to manage--they should be pushed down mercilessly! Talent and character--this is a mongrel, I

have an innate hatred for it, and I am not ashamed of this. This combination will be my enemy until death. Either mine or his. There is no third party. If each of you is not imbued with hatred, if we do not stand together, it is the end for all of us. Neither salaries nor presidiums nor personal vehicles, but the main thing--power over people, power!--we will have none of this. Everybody will be gradually pushed onto a pension, even ahead of time. 132 rubles," Seryy grinned, "and you will smack your lips and play dominoes. Do you understand this?"

Voices from the hall: "You are scaring us, Kuzmich, we are afraid".... "We are already afraid without you...." "It is better to tell us what to do...."

"We shall consider why we have gathered here. I shall return to those who are bothered. We must keep track of all of them, down to the last one, on lists! We shall call them in one at a time for a personal discussion. We shall praise them, promise them help, if possible we shall even increase their salary, and not refuse them anything. But we must pull and pull and pull. We should not allow them to group together anywhere--this is especially important. They have a song: 'Let Us Hold Hands, Friends....' This is the most dangerous thing for us. We must keep them apart! After you have promised them help transfer them to a collective where there are nothing but buffoons and indifferent people. There they will poison them, give them doubts, and destroy them. Start rumors that they are undermining the norms, the pay, the personnel. It is important for each person who is discontented to be surrounded by emptiness. And they are always glad to condemn the opinion of these indifferent people. But this opinion must come from below, from below, not from you!"

Seryy's foxy mug expressed inspiration, the graying mop of hair shook militantly, the thin neck straightened up.... He was orating!

And the hall paid attention.

"But I have not said enough!" the speaker shouted. "Not enough! It is necessary to create a body of pseudotalents. Consisting of our own people in whom we have confidence. We must give the impression that we are putting a slight pressure on them and repeat that there is no possibility of help--we must say that this is the problem, but that they are born leaders, talents! Let them flail around a little bit. Create a reliable reserve from them. In brief, we need a strategy, we need a system. It would not be a bad idea for us production workers to learn culture from the masters. There the procedure for processing young obstinate talents into intelligent and agile lackeys is a fine art. They have immense experience and methods and they are all in reliable references. Build bridges, they also need us, we are--the sphere of material production, power!"

This time there was an explosion of applause. The "untalented" faces sparkled. No, whatever you say, Seryy is a leader! His voice sounds confident.

"They have come to attack us. But we shall not lead with the chin! Let them call us untalented, but there are many of us. We have lived well and we will

not give up our lot. And we shall not whimper! We must understand that there must be no tears.

"On this plane I should like to begin the discussion, my untalented comrade leaders. I am through."

And the discussions began.

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